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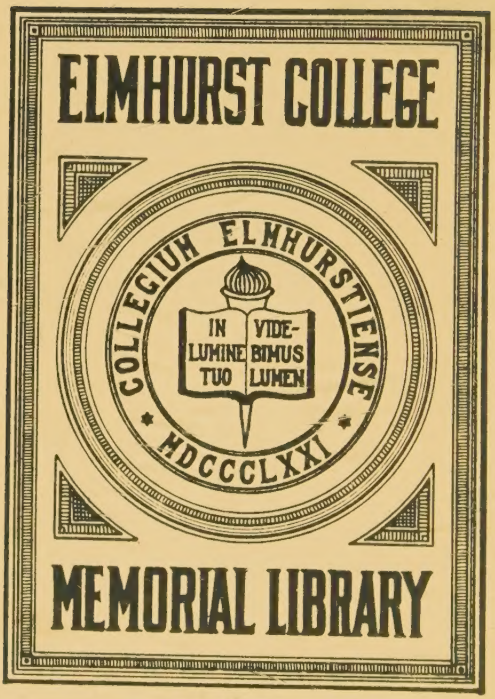
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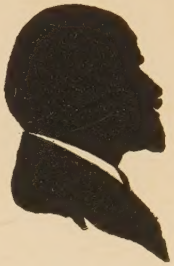

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OF

V. I. LENIN

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LENIN

VOLUME XIII

MATERIALISM AND EMPIRIO-CRITICISM

CRITICAL NOTES CONCERNING A REACTIONARY PHILOSOPHY

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MATERIALISM
AND
EMPIRIO-CRITICISM

AUTHOR'S PREFACE TO THE FIRST EDITION

A HOST of writers, who desire to be Marxists, have launched a veritable onslaught against the philosophy of Marxism. In less than half a year four books, devoted chiefly and almost exclusively to attacks on dialectic materialism, have made their appearance. To those belong first and foremost *Outlines of* (it would have been more proper to say "against") *Marxian Philosophy*, St. Petersburg, 1908 (in Russian), a collective work by Bazarov, Bogdanov, Lunacharsky, Berman, Helfond, Yushkevich and Suvorov; Yushkevich's book, *Materialism and Critical Realism* (in Russian); Berman's *Dialectics from the Standpoint of the Modern Theory of Knowledge* (in Russian); Valentinov's *The Philosophical Foundation of Marxism* (in Russian). It is hardly possible that all these people should be innocent of the fact that scores of times Marx and Engels termed their philosophy dialectic materialism. Yet all these people, who, despite the sharp differences between their political views, are united in their common hostility toward dialectic materialism, pretend that they are Marxists in philosophy! Engels' dialectics is "mysticism," says Berman. Engels' views became "antiquated," remarks Bazarov in passing as if it were a self-evident fact. Materialism is proved to have been refuted by our brave warriors who proudly cite in support the "modern theory of knowledge," the "most recent philosophy" (or "most recent positivism"), the "philosophy of modern natural science" or even the "philosophy of natural science of the twentieth century." Leaning upon all these supposedly most recent doctrines, our annihilators of dialectic materialism go so far as to speak openly in favour of fideism[1] (in the case of Lunacharsky it is most outspoken, but in this he does not stand alone by any means!). Yet they lose all courage and esteem for their own convictions when it comes to an explicit statement regarding their relations toward Marx and Engels. In fact—we have a total renunciation of dialectic materialism, of Marxism; in words—we have infinite evasions, attempts to beat about the bush, to shield their retreat, to make some materialist their target instead

[1] *Fideism* is a doctrine which puts faith in place of knowledge, or which generally attributes preponderant significance to faith.

of the philosophy of materialism, a determined refusal to analyse directly the numerous materialist declarations of Marx and Engels. This is really "mutiny on one's knees" as it was justly characterised by one Marxist. This is typical philosophic revisionism, for only the revisionists gained notoriety by their deviations from the fundamental views of Marxism, and by their fear or inability to "settle accounts" with those abandoned views explicitly, determinedly and clearly. On the other hand, when orthodox Marxists took issue with some antiquated views of Marx (for instance, Mehring on some historical questions), it was done with such preciseness and thoroughness that no one ever found any ambiguities in it.

As for the rest, there is in the *Outlines* (*op. cit.*) one phrase (Lunacharsky's) resembling the truth: "Perhaps we [that is obviously all the collaborators of the *Outlines*] stray, but we are seekers" (p. 161). That the first half of this sentence contains an absolute, and the second, a relative truth, I shall endeavour to show in detail in the present book. At the moment I shall only note that if our philosophers would not have spoken in the name of Marxism, but in the name of a few "seeking" Marxists, they would have manifested more esteem toward themselves and toward Marxism.

As far as I am concerned, I, too, am a "seeker" in philosophy. The task which I have set for myself in this book is simply to find out what is the trouble with those who under the guise of Marxism are offering something baffling, confusing and reactionary.

September, 1908.

AUTHOR'S PREFACE TO THE SECOND EDITION

The present edition, with the exception of some corrections, does not differ from the previous one. I hope that it will prove useful, notwithstanding the polemics against the Russian "Machians," as an aid to the study of Marxian philosophy and dialectic materialism as well as to the understanding of the philosophic conclusions of the latest discoveries in natural science. As for Bogdanov's latest works, which I have had no opportunity to examine, the appended article by V. I. Nevsky gives the necessary information. Comrade Nevsky, working, not only as a propagandist, but as a worker in a party school, had ample opportunity to convince himself that under the guise of "proletarian culture" Bogdanov is introducing bourgeois and reactionary views.

September 2, 1920.

INTRODUCTION

HOW CERTAIN "MARXISTS" IN 1908 AND CERTAIN IDEALISTS IN 1710 REFUTED MATERIALISM

ONE who has the slightest acquaintance with philosophical literature must be aware of the fact that there is hardly one contemporary professor of philosophy—and theology as well—who is not directly or indirectly engaged in overthrowing materialism. A thousand times has materialism been disproved, yet for the thousand and first time they are still continuing to overthrow it. All our revisionists are engaged in disproving materialism, pretending that they are refuting only the materialist Plekhanov, but not the materialist Engels, not the materialist Feuerbach, nor the materialist views of Dietzgen. In addition they pretend to refute materialism from the standpoint of "recent" and "modern" positivism, natural science, etc.

Without adducing quotations from these books which one could produce by the hundreds at will, I shall refer only to those proofs by which materialism is being combated by Bazarov, Bogdanov, Yushkevich, Valentinov, Chernov [1] and other Machians. I shall use this term (Machian) as a synonym for the term "empirio-criticist" because it is brief and simple and already enjoys the rights of citizenship in Russian literature. That Ernst Mach is the most popular representative of empirio-criticism is universally acknowledged in philosophic literature.[2] As to Bogdanov's and Yushkevich's deviations from "pure" Machism, it will later be shown that they are of secondary importance.

The materialists, we are told, avow something unthinkable and unknowable—"things-in-themselves,"—matter "outside of experience" and beyond our cognition. They relapse into actual mysticism, admitting the existence of something transcending the

[1] V. Chernov: *Philosophical and Sociological Studies*, Moscow, 1907 (in Russian). The author is as ardent an adherent of Avenarius and an enemy of dialectic materialism as Bazarov *et al.*

[2] *Cf.* Dr. Richard Hönigswald: *Ueber die Lehre Humes von der Realität der Aussendinge*, Berlin, 1904, p. 26.

boundaries of "experience" and cognition. Asserting that when matter acts upon our sense organs, it produces sensations, the materialists regard as the ultimate principle the "unknown," nothingness; for they themselves declare our perceptions supposedly to be the only source of knowledge. The materialists fall into "Kantianism" (*e. g.*, Plekhanov, by recognising the existence of "things-in-themselves,"—that is of things outside of our consciousness); they "duplicate" the world and profess "dualism," for, besides the appearance, the materialists hold that there is the thing-in-itself; beyond the immediate sense data they supposedly postulate something else, some fetish, an idol, an absolute, the source of metaphysics, the double of religion ("the holy matter," as Bazarov says).

Such are the proofs of the Machians against materialism repeated by the aforementioned writers in many ways.

In order to determine whether these proofs are new, and whether they are really directed against only one Russian materialist who "fell into Kantianism," we shall adduce some detailed quotations from the works of George Berkeley, an old idealist. This historical inquiry is the more necessary in our introductory remarks since we shall have to refer more than once to Berkeley and his tendency in philosophy, for the Machians have wrongly represented the relationship of Mach to Berkeley and to the latter's philosophic position.

The work of Bishop George Berkeley, published in 1710 under the title, *Treatise Concerning the Principles of Human Knowledge*,[3] begins with the following argument: "It is evident to anyone who takes a survey of the objects of human knowledge, that they are either ideas actually imprinted on the senses; or else such as are perceived by attending to the passions and operations of the mind; or, lastly, ideas formed by help of memory and imagination. . . . By sight I have the ideas of light and colours, with their several degrees and variations. By touch I perceive hard and soft, heat and cold, motion and resistance. . . . Smelling furnishes me with odours; the palate with tastes; and hearing conveys sounds. . . . And as several of these are observed to accompany each other, they come to be marked by one name, and so to be reputed as one thing. Thus, for example, a certain colour, taste, smell, figure and consistence having been observed to go together, are accounted one distinct thing, signified by the name apple; other collections of

[3] Vol. I, § 1, edited by A. C. Fraser, Oxford, 1871.

ideas constitute a stone, a tree, a book, and the like sensible things . . ."

Such is the content of the first paragraph of Berkeley's work. Let us not forget that Berkeley takes as the ultimate forms of his philosophy the principles "hard, soft, heat and cold, colours, tastes, odours," etc. For Berkeley things are "collections of ideas," designating by this expression the aforesaid qualities or sensations, and not abstract thoughts.

Besides those "ideas or objects of knowledge," according to Berkeley, there exists something that perceives them—"mind, spirit, soul or myself" (§ 2). It is self-evident, the philosopher concludes, that "ideas" cannot exist outside of the mind that perceives them. In order to convince ourselves of the truth of this statement, let us take the meaning of the word "exist." "The table I write on, I say exists, that is, I see and feel it; and if I were out of my study I should say it existed —meaning thereby that if I was in my study I might perceive." That is what Berkeley says in § 3 of his work, and right there he begins to discuss the question with people whom he calls materialists (§§18, 19 *ff*). "I cannot conceive"—says he—"how it is possible to speak of the absolute existence of things without their relation to the fact that somebody perceives them. To exist means to be perceived" (their *esse* is *percipi*, § 3; this saying is frequently quoted in philosophic textbooks). "It is indeed an opinion strangely prevailing amongst men, that houses, mountains, rivers, and in a word all sensible objects, have an existence, natural or real, distinct from their being perceived by the understanding" (§ 4). This principle is a "manifest contradiction," says Berkeley. "For, what are the aforementioned objects but the things we perceive by sense? and what do we perceive besides our own ideas or sensations? and is it not plainly repugnant that any one of these, or any combination of them, should exist unperceived?" (§ 4).

The expression, "collection of ideas," Berkeley now changes for what (according to him) is the identical expression, "combination of sensations," accusing the materialists of the "absurd" tendency to go still further, of seeking the source of this "complex,"—this "combination of sensations." In § 5 the materialists are accused of trifling with an abstraction, for to separate sensation from an object, according to Berkeley, is an empty abstraction. "In truth [according to Fraser this sentence is omitted in the second edition] the

object and the sensation are the same thing, and cannot therefore be abstracted from each other. But, say you, though the ideas themselves do not exist without the mind, yet there may be things like them, whereof they are copies or resemblances, which things exist without the mind in an unthinking substance. I answer, an idea can be like nothing but an idea; a colour or figure can be like nothing but another colour or figure. . . . I ask whether those supposed originals or external things, of which our ideas are the pictures or representations, be themselves perceivable or no? If they are, then they are ideas and we have gained our point; but if you say they are not, I appeal to anyone whether it be sense to assert a colour is like something which is invisible; hard or soft, like something which is intangible; and so of the rest" (§ 8).

As the reader sees Bazarov's "arguments" against Plekhanov concerning the problem of whether things can exist apart from their action on us, he will realise that they do not differ in the least from Berkeley's arguments against the materialists whom he does not mention by name. Berkeley considers the notion of the existence of "matter or corporeal substance" (§ 9) as "contradictory," holding that it is not worth the time exposing its "absurdity." He says: "But, because the tenet of the existence of Matter seems to have taken so deep a root in the minds of philosophers, and draws after it so many ill consequences, I choose rather to be thought prolix and tedious than omit anything that might conduce to the full discovery and extirpation of that prejudice" (§ 9).

We shall soon see what Berkeley means by the expression "ill consequences." Let us first complete his theoretical demonstrations against the materialists. Denying the "absolute" existence of objects, that is the existence of things outside human knowledge, Berkeley expounds the views of his enemies in such a way as if they recognised the "thing-in-itself." In § 24 he says that this notion, which he refutes, recognises (emphasising the following words) "*The absolute existence of sensible objects in themselves, or without the mind*" (pp. 167-8). Here are two fundamental philosophic principles, depicted with such uprightness, clarity and precision, that they distinguish the classic philosophers from the inventors of "new" systems. By materialism is meant recognition of "objects in themselves," or "without the mind"; ideas and sensations are copies or images of those objects. The opposite doctrine (ideal-

ism) claims that objects do not exist "without the mind"; objects are "combinations of sensations."

This was written in 1710, fourteen years before the birth of Immanuel Kant; yet our Machians, supposedly on the basis of "modern" philosophy, made the discovery that the recognition of "objects in themselves" is the result of the contagion or perversion of materialism by Kantianism! The "new" discoveries of the Machians are clearly products of their astounding ignorance of the history of basic philosophic tendencies.

Their "new" thought consists in this; that the concepts of "matter" or "substance" are remnants of the old uncritical views. Mach and Avenarius, don't you see, have given the impetus to philosophical reflection, have deepened the analysis and eliminated the "absolutes," the "unchangeable entities," etc. If you wish to check such assertions with the original sources, compare them with Berkeley, and you will see that they reduce themselves to shallow pretence. Berkeley says very definitely that matter is a *nonentity* (§ 68), that matter is *nothing* (§ 80). "You may," thus Berkeley ridicules the materialists, "if so it shall seem good, use the word 'Matter' in the same sense as other men use 'nothing' " (*ibid.*, pp. 196-7). At the beginning, says Berkeley, it was believed that colours, odours, "really exist," but subsequently such views were renounced, and it was granted that they only exist depending on our sensations. But this removal of the old erroneous conceptions was not completed; the remainder is the idea of "substratum or substance that is a plain repugnancy" (p. 195), which was finally revealed by Bishop Berkeley in 1710! In 1908 there were still such triflers who seriously believed Avenarius, Petzoldt, Mach *et al.*, according to whom only "recent positivism" and "recent natural science" could succeed in removing these "metaphysical" conceptions.

These same triflers (amongst them Bogdanov) assure us that it was the new philosophy that corrected the much refuted error of the materialists concerning the "reduplication of the world"—concerning the "reflections" in the human mind of things existing without the mind. A mass of sentimental stuff has been written about this "reduplication" by the above-named authors. Due to forgetfulness, or ignorance, they overlooked the fact that these new discoveries had already been discovered in 1710.

"Our knowledge of these hath been very much obscured and confounded, and we have been led into very dangerous errors, by

supposing a twofold existence of the objects of sense—the one *intelligible* or in the mind, the other *real* and without the mind" (§ 86). And Berkeley ridicules such "absurd" notions, which admit the possibility of thinking the unthinkable! The source of the absurdity—"follows from our supposing a difference between *things* and *ideas* . . . and depends on the supposition of external objects" (§ 87). The same source—discovered by Berkeley in 1710 and again by Bogdanov in 1908—produces faith in fetishes and idols. "The existence of Matter, or bodies unperceived, has not only been the main support of Atheists and Fatalists, but on the same principle doth Idolatry likewise in all its various forms depend" (§ 94).

Here we reach those "repugnant" conclusions derived from the "absurd" teaching of the existence of the external world which compelled Bishop Berkeley not only theoretically to repudiate the doctrine, but passionately to persecute its adherents as enemies. "For, as we have shewn, the doctrine of Matter or corporeal substance to have been the main pillar and support of Scepticism, so likewise upon the same foundation have been raised all the impious schemes of Atheism and Irreligion. . . . How great a friend *material substance* has been to Atheists in all ages were needless to relate. All their monstrous systems have so visible and necessary a dependence on it that, when this corner-stone is once removed, the whole fabric cannot choose but fall to the ground, insomuch that it is no longer worth while to bestow a particular consideration on the absurdities of every wretched sect of Atheists" (§ 92).

"Matter being once expelled out of nature drags with it so many sceptical and impious notions, such an incredible number of disputes and puzzling questions ["The principle of economy of thought," discovered by Mach in the '70's of the last century! Philosophy as reflection of the world according to the "principle of minimum effort"—by Avenarius in 1876!] which have been thorns in the sides of divines as well as philosophers, and made much fruitless work for mankind, that if the arguments we have produced against it are not found equal to demonstration (as to me they evidently seem), yet I am sure all friends to knowledge, peace, and religion have reason to wish they were" (§ 96).

Frankly and plainly did Bishop Berkeley argue! In our time, however, these very thoughts—of withdrawing "matter" from philosophy for reasons of "economy"—are expressed in a form more

cunning and baffling, disguised by the use of "new" terminology. This is done in order that these thoughts should be regarded by "naïve" people as the most modern philosophy!

But frankness about the tendencies of his philosophy was not the only object of Berkeley; he also endeavoured to cover its idealistic nakedness and to present it devoid of absurdities and acceptable to "common sense." Instinctively defending himself against the accusations of what is nowadays called subjective idealism and solipsism, he says "that by the principles premised we are not deprived of any one thing in nature" (§ 34). "There is a *rerum natura* and the distinction between realities and chimeras retains its full force; but then they both equally exist in the mind" (§ 34). "I do not argue against the existence of any one thing that we can apprehend either by sense or reflection. That the things I see with my eyes and touch with my hands do exist, really exist, I make not the least question. The only thing whose existence we deny is that which philosophers call Matter or corporeal substance. And in doing this there is no damage done to the rest of mankind, who, I dare say, will never miss it. The Atheist indeed will want the colour of an empty name to support his impiety" (§ 35).

This thought is made still clearer in § 37, where Berkeley defends his philosophy against the accusation of destroying corporeal substances: "If the word substance be taken in the vulgar sense—for a combination of sensible qualities, such as extension, solidity, weight and the like—this we cannot be accused of taking away: but if it be taken in a philosophic sense—for the support of accidents or qualities without the mind—then indeed I acknowledge that we take it away, if one may be said to take away that which never had any existence, not even in the imagination."

Fraser, the English philosopher and idealist, an adherent of Berkeleianism, who edited Berkeley's works, having supplied them with his own annotations, designates Berkeley's doctrine by the term "Natural Realism" (*ibid.* p. x). This amusing terminology must by all means be noted, for it tells the tale of Berkeley's intention to pose as a realist. In our further exposition we will from time to time meet with the "recent positivists," who employ the same stratagem or guile. Berkeley does not deny the existence of real objects! Berkeley does not go against the opinions of humanity! Berkeley denies "only" the teachings of the philosophers, their theory of knowledge, the teaching which takes as a starting

point the recognition of the external world and the reflection thereof in the human mind. Berkeley does not deny natural science which has always adhered (mostly unconsciously) to the materialist theory of knowledge! "We may, from the experience [4] [Berkeley—philosophy of "pure experience"] we have had of the train and succession of ideas in our minds . . . often make well-grounded predictions concerning the ideas we shall be affected with pursuant to a great train of actions, and be enabled to pass a right judgment of what would have appeared to us, in case we were placed in circumstances very different from those we are in at present. Herein consists the knowledge of nature, which [listen to this!] may preserve its use and certainty very consistently with what hath been said" (§ 59).

Let us regard the external world, or nature as "a combination of sensations" which is caused in our mind by the divinity. Admit this and give up searching for the "ground" of these sensations outside of the mind and man, and I will recognize within the framework of the idealist theory of knowledge *all* of natural science, the application and certainty of its inferences. It is exactly this framework that I need for my conclusions for the sake of "peace and religion." Such is Berkeley's idea. It correctly expresses the essence and social significance of idealist philosophy, and we will encounter it later, when we come to speak of the relation of Machism to natural science.

Let us now consider another "recent" discovery that was borrowed from Bishop Berkeley by the recent positivist and critical realist, P. Yushkevich. This discovery is called "empirio-symbolism." "Berkeley," says Fraser, "thus reverts to his favourite theory of a Universal Natural Symbolism" (p. 190). If these words were not mentioned in the edition of 1871, one would suspect the English philosopher and fideist, Fraser, of plagiarising the works of both the modern mathematician and physicist H. Poincaré and the Russian "Marxist" Yushkevich!

As for Berkeley's theory, which threw Fraser into rapture, it is expounded in the following words: "The connexion of ideas [do not forget that for Berkeley ideas and objects are identical] does not imply the relation of *cause* and *effect*, but only of a mark or *sign* with the thing *signified*" (§ 65). "Hence, it is evident that

[4] In his preface Fraser insists that both Berkeley and Locke "appeal exclusively to experience as their final test" (p. 117).

those things which, under the notion of a cause co-operating or concurring in the production of effects, are altogether inexplicable, and run us into great absurdities, may be very naturally explained . . . when they are considered only as marks or signs for our information" (§ 66). Of course, in the opinion of Berkeley and Fraser, no other than the divinity informs us by means of these "empirio-symbols." The epistemological significance of symbolism in Berkeley's theory consists in this, that one must change the "doctrine" which pretends "to explain things by corporeal causes" (§ 66).

In the question of causality there are before us two philosophic tendencies, one of which "pretends to explain things by corporeal causes." It is clear that it is connected with the "absurd doctrinaire matter," refuted by Bishop Berkeley. The other theory reduces the "notion of causality" to the notion of "mark or sign" which serves for "our information" (supplied by God). We shall meet these two tendencies in a twentieth-century garb when we analyse the relationship of both Machism and dialectic materialism to this question.

Furthermore, it ought to be remarked that on the question of reality Berkeley, refusing to recognise the existence of things outside the mind, tries to find a criterion in order to distinguish between the real and the fictitious. In § 36 he says that those "ideas" which are called out by the human mind "at pleasure" "are faint, weak, and unsteady in respect of others they perceive by sense—which, being impressed upon them according to certain rules and laws of nature, speak themselves about the effects of a mind more powerful and wise than human spirits. These latter are said to have more *reality* in them than the former;—by which is meant that they are more affecting, orderly, and distinct, and that they are not fictions of the mind perceiving them. . . ." Elsewhere (§ 84) Berkeley tries to connect the idea of reality with the simultaneous perception of the very same sensations by many people. For instance, how shall we answer the question, raised by the legend in which we are told, that the transformation of water into wine is real. "If at the table all who were present should see, and smell, and taste, and drink wine, and find the effects of it, with me there could be no doubt of its reality"; and Fraser remarks: "The simultaneous consciousness of, or participation in, the 'same' *sense*—ideas, by different persons, as distinguished from the purely

individual or personal consciousness of *imaginary* objects and emotions, is here referred to a test of the *reality* of the former."

It is evident that Berkeley's subjective idealism is not to be interpreted as if he ignored the distinction between individual and collective perception. On the contrary, on the basis of this distinction he attempts to construct the criterion of reality. Inferring "ideas" from the divinity's effects upon human mind, Berkeley thus comes near to objective idealism: the world is not my idea, but it becomes the product of a supreme spiritual cause that creates the "laws of nature," and laws for distinguishing "more real" ideas from those less real.

In another work of his, *The Three Dialogues between Hylas and Philonous* (1713), where he endeavours to present his views in a specially popular form, he thus states the difference between his doctrines and those of the materialists:

"I assert as well as you [materialists] that, since we are affected from without, we must allow powers to be without, in a being distinct from ourselves. But then we differ as to the kind of this powerful being. I will have it to be Spirit, you Matter, or I know not what (I may add, you, too, know not what) third nature" . . . (Vol. I, p. 335).

Fraser comments: "This is the gist of the whole question. According to the Materialists, sensible phenomena are due to MATERIAL SUBSTANCE, or to some unknown 'third nature'; according to Berkeley, to Rational Will; according to Hume and the Positivists, their origin is absolutely unknown, and we can only generalise them inductively, through custom, as facts."

The English Berkeleian, Fraser, from his consistent idealist viewpoint, recognises the same fundamental divisions in philosophy which were distinguished with such great lucidity by the materialist Engels. In his work, *Ludwig Feuerbach*, Engels divides philosophers into "two great camps"—materialists and idealists. Engels, who considered more closely than Fraser the well developed and varied content of both types of theories, sees this fundamental distinction between them: that while to the materialists nature is primary and spirit secondary, to the idealists the reverse is the case. Between these two schools of thought Engels places the adherents of Hume and Kant who deny the possibility of knowing the world, or at least of fully knowing it, and he terms them *agnostics*. In his *Ludwig Feuerbach* Engels applies this term only to the adherents of Hume

(the very same people whom Fraser names agnostics, and who prefer to call themselves "positivists"). But in his article on "Historical Materialism," Engels speaks directly of the standpoint of "the Neo-Kantian agnostic," regarding Neo-Kantianism also as a variety of agnosticism.[5]

We cannot stop here to consider this remarkably correct and profound argument of Engels—an argument which is impudently ignored by the Machians. We shall discuss this fact at length later on. Now we shall confine ourselves to the task of calling attention to the Marxian terminology and to this meeting of extremes—the views of a consistent materialist and a consistent idealist upon the fundamental philosophic issues. To elucidate these tendencies (with which we shall constantly have to deal in our further exposition) let us briefly note the views of the outstanding philosophers of the eighteenth century, who had taken a path other than Berkeley's.

These are Hume's arguments: "It seems evident, that men are carried, by a natural instinct or prepossession, to repose faith in their senses; and that, without any reasoning, or even almost before the use of reason, we always suppose an external universe, which depends not on our perception, but would exist, though we and every sensible creature were absent or annihilated. Even the animal creations are governed by a like opinion, and preserve this belief of external objects, in all their thoughts, designs and actions. . . . But this universal and primary opinion of all men is soon destroyed by the slightest philosophy, which teaches us, that nothing can ever be present to the mind but an image or perception, and that the senses are only inlets, through which these images are conveyed, without being able to produce any immediate intercourse between the mind and the object. The table, which we see, seems to diminish, as we remove farther from it: but the real table, which exists independent of us, suffers no alteration: it was, therefore, nothing but its image, which was present to the mind. These are the obvious dictates of reason; and no man, who reflects, ever doubted, that the existences, which we consider, when we say, *this house* and *that tree*, are nothing but perceptions in the mind. . . . By what arguments can it be proved, that the perceptions of the mind must be caused by external objects, entirely different from them, though

[5] Friedrich Engels: *Historical Materialism*, Labor News Co., New York, 1902; published as an introduction to his *Socialism, Utopian and Scientific.*

resembling them (if that be possible) and could not arise either from the energy of the mind itself, or from the suggestion of some invisible and unknown spirit, or from some other cause still more unknown to us? . . . How shall the question be determined? By experience surely; as all other questions of a like nature. But here experience is, and must be entirely silent. The mind has never anything present to it but the perceptions, and cannot possibly reach any experience of their connexion with objects. This supposition of such a connexion is, therefore, without any foundation in reasoning. To have recourse to the veracity of the supreme Being, in order to prove the veracity of our senses, is surely making a very unexpected circuit. . . . If the external world be once called in question, we shall be at a loss to find arguments, by which we may prove the existence of that Being or any of his attributes." [6]

He says the same thing in his *Treatise of Human Nature*: [7] "There is only a single existence, which I shall call indifferently *objects* or *perceptions*." By scepticism Hume means the refusal to explain sensations as the effects of objects, spirit, etc., a refusal, on the one hand, to reduce perceptions to the external world, and on the other, to the divinity or to an unknown spirit. And the author of the introduction to the French translation of Hume, F. Pillon—a philosopher related to Mach's school (as we shall see below)—is right in saying that for Hume the subject and the object are reduced to "groups of various perceptions," to "elements of consciousness, to impressions, ideas, etc."; that the only concern should be with the "groupings and combinations of these elements." [8] Huxley, the English Humean, who coined the well-aimed and correct term "agnosticism," in his *Hume* also emphasises the fact that the agnostic, regarding "sensations" as the "primary and irreducible states of consciousness," is not consistent in his reply to the question how the origin of sensations is to be explained, whether by the effect of the objects on man or by the creative power of the mind. "Realism and idealism are equally probable hypotheses." [9] Hume does not go further than sensations. "Thus the colours red and blue, and the odour of a rose, are simple impressions. . . . But a red rose

[6] David Hume: *An Enquiry Concerning Human Understanding*, Essays and Treatises, London, 1882, Vol. II, pp. 151-153.

[7] Part IV, Sect. II, p. 491, London, 1882.

[8] *Psychologie de Hume. Traité de la nature humaine*, etc. Trad. par Ch. Renouvier et Pillon, Paris, 1878, Introduction, p. x.

[9] Thomas Huxley: *Hume*, London, 1879, p. 74.

gives us a complex impression, capable of resolution into the simple impressions of red colour, rose scent, and numerous others" (pp. 64-65). Hume admits both a "materialist position" and an "idealist position" (p. 82); the "collection of perceptions" may be generated by the Fichtean "ego" or may be a "signification and even a symbol" of "something real." This is how Huxley interprets Hume.

The materialist and leading spirit of the Encyclopedists, Diderot, gives the following opinion on Berkeley: "Those philosophers are termed idealists who, conscious only of their own existence and of a succession of external sensations, do not admit anything else. An extravagant system which should to my thinking have been the offspring of blindness itself. And yet, to the disgrace of the human mind and philosophy this system though the most absurd, is the most difficult to combat."[10] And Diderot who came very close to the view of contemporary materialism (that arguments and syllogisms alone would not suffice to refute idealism, and that it is not a question of theoretical argument), shows the similarity of the propositions of both the idealist Berkeley and Condillac, of the sensationalist school. In his opinion, Condillac should have disproved Berkeley in order to avoid such absurd conclusions of regarding sensations as the only source of our knowledge.

In the *Dialogue of D'Alembert and Diderot*, Diderot thus states his philosophic position: "Suppose a pianoforte be endowed with the faculty of sensation and memory, tell me would it not of its own accord repeat those airs which you have played on its keyboard? We are instruments endowed with the faculties of sensation and memory. Our senses are keys upon which surrounding nature strikes and which strike upon themselves. This is all, according to my opinion, that occurs in the piano which is organised like you and myself." D'Alembert retorts that such an instrument would have to possess the faculty of finding food for itself and of reproducing little pianos. Undoubtedly, contends Diderot, and offers the egg as an example. "This is what refutes all the teachings of theology and all the churches on the globe. What is this egg? A mass that has no senses until the embryo is introduced thither, and when this embryo is introduced, what is it then? An unperceiving mass, for in its turn, this embryo is only an inert and rude liquid. How is this mass reorganised, how does it begin to feel

[10] *Oeuvres complétes de Diderot*, ed. par J. Assezat, Paris, 1875, Vol. I, p. 304.

and to live? By means of heat. And what produces heat? Motion. . . . The living being that is hatched from the egg is endowed with all your sensations, and performs all your operations. Would you say with Descartes that this is a simple imitating machine? Little children will laugh at you, and the philosopher will contend that if this be a machine then you, too, are a machine. If you admit that the difference between these animals and you consists only in their organisation, you will prove that your judgment is sound, and you will be right. But from this will follow the inference that refutes you; namely, that from matter organised in a certain way, followed by the action of another bit of inert matter, and consequently from heat and motion—the faculties of sensation, life, memory, consciousness, emotion, and reflection are generated." "One of the two," continues Diderot, "either you must admit some 'hidden element' in the egg, that penetrates in an unknown way at the moment of a certain stage of development, an element about which it is unknown whether it takes up space, whether it is material or whether it is created for the occasion—a position which contradicts common sense, and leads to inconsistencies and absurdities; or we must make a simple supposition which explains everything, namely, that the faculty of sensation is the general property of matter, or a product of its organisation."

To the reply of D'Alembert that such supposition implies a quality which is in its essence incompatible with matter, Diderot retorts: "And how do you know that the faculty of sensation is essentially incompatible with Matter, so long as you know neither the essence of things in general, nor the essence of Matter, nor the essence of sensation? Do you understand the nature of motion any better, its existence in a body, its transmission from one body to another?"

D'Alembert: "Without knowing nature, or sensation, or Matter, I see, however, that the faculty of sensation is a simple quality, single, indivisible, and incompatible with the subject and substratum, which is divisible."

Diderot: "Metaphysico-theological nonsense! What, don't you see that all qualities of Matter, all its forms that are accessible to us, are in their essence indivisible? There cannot be a larger or a smaller degree of impenetrability. There may be half of a round body, but there is no half of roundness. . . . Be a physicist and admit the produced character of the given effect when you see

how it is produced, though you may not be able to explain the relation between the cause and effect. Be logical and do not place instead of the cause, which exists and explains everything, another cause which is impossible to comprehend, and whose connection with the effect is still more difficult to grasp, and which arouses an infinite number of difficulties, without solving even one of them."

D'Alembert: "And if I will take this cause as a starting point?"

Diderot: "There is in the Universe one substance only, both in man and in animal. A hand-organ from wood, man from flesh. A pinefinch from flesh, and a musician from flesh who is differently organised; but one and the other are of the same origin, of the same formation, have the same functions and the same goal."

D'Alembert: "And in what way is there a similarity of sounds between your two pianofortes?"

Diderot: ". . . An instrument endowed with the faculty of sensation, or an animal which learned by experience that after a certain sound certain consequences follow outside it; that other feeling instruments, similar to it, or other animals, draw closer or go farther, who demand, or offer, cause a wound or caress;—and all these consequences are thus associated with certain sounds in its memory and in the memory of other animals. Mark you that in human transactions there is nothing beside sounds and actions. And to appreciate the power of my system, note again, that it is subject to the same insurmountable difficulty which Berkeley set up against the existence of bodies. There was a moment of insanity when the feeling piano imagined that it is the only existing piano in the world, and that the whole harmony of the universe resided in it." [11]

This was written in 1769. And with this we shall conclude our brief historic inquiry. We shall more than once meet "the insane piano" and the harmony of the world ensuing within man when we analyse "recent positivism." Now we shall limit ourselves to one conclusion: the "recent" Machians did not adduce even one argument which had not been put forth by Bishop Berkeley.

As a curiosity let us note that one of these Machians, Valentinov, vaguely feeling the falsity of his position, tried to "blot out traces" of his affinity to Berkeley; he did this in a very amusing way. On page 150 of his book we read: "We ask those, who when speaking of Mach, point to Berkeley, which Berkeley do they mean? Do they

[11] *Ibid*, Vol. II, pp. 114-118.

mean the Berkeley who considers himself [Valentinov wishes to say who is considered] a solipsist; or the Berkeley who insists upon the immediate presence and providence of the deity? Generally speaking [?], do they mean Berkeley, the philosophising bishop, who vehemently attacks atheism, or Berkeley, the thoughtful analyser? With Berkeley, the solipsist, and preacher of religious metaphysics, Mach really had nothing in common." Valentinov confuses things, unable to account for the reason of his defence of the "thoughtful analyser" and idealist Berkeley against the materialist Diderot. Diderot clearly draws the line of demarcation between the fundamental philosophical tendencies. Valentinov confuses them, and while doing it, he consoles us in a ludicrous way. "We do not consider the 'kinship' of Mach with the idealist views of Berkeley as a philosophic crime," he says, "even if it were to exist" (p. 149). To confound two irreconcilable fundamental divisions in philosophy—really, what "crime" is there? But the whole wisdom of Mach and Avenarius can only be reduced to such confusion. We shall now turn to the analysis of this great wisdom.

CHAPTER ONE

THE THEORY OF KNOWLEDGE OF EMPIRIO-CRITICISM AND OF DIALECTIC MATERIALISM I

1. *Sensations and Complexes of Sensations*

THE fundamental tenets of the theory of knowledge of Mach and Avenarius are expounded with frankness, simplicity and clearness only in their early philosophic works. To these works we shall now turn. As to the corrections and emendations which were afterwards effected by these writers, we shall take them up later on.

"The problem of science," Mach wrote in 1872, "can be split into three parts:

"1. The determination of the connection of presentations. This is psychology.

"2. The discovery of the laws of the connection of sensations (perceptions). This is physics.

"3. The clear establishment of the laws of the connection of sensations and presentations. This is psycho-physics." [1]

This is clear enough.

The object of physics is the relation between sensations, and not between things or bodies, the images of which are our sensations. And in 1883, in his *Die Mechanik in ihrer Entwickelung*, Mach repeats the very same notion: "Sensations are not 'symbols of things.' The 'thing' is rather the mental symbol of the complex of sensations which is in a state of relative equilibrium. Not the things (bodies) but colours, sounds, pressures, spaces, times (what we usually call sensations), are the actual elements of the world." [2]

About this word "elements," the fruit of twelve years of "reflection," we shall speak further. At present let us note that Mach is explicit in his statement that things or bodies are complexes of sensations, and that his position is the opposite of that which holds that sensations are "symbols" of things (it would be more correct

[1] Ernst Mach: *History and Root of the Principle of the Conservation of Energy*, London, 1911, p. 91.

[2] Ernst Mach: *Die Mechanik in ihrer Entwickelung historisch-kritisch dargestellt.* 3 Auflage, Leipzig, 1897, p. 473.

to say images or reflections of things). The latter theory is philosophic materialism. For instance, Friedrich Engels—the well-known collaborator of Marx and the co-founder of Marxism—constantly and exclusively speaks in his works of things and their mental images or reflections (*Gedanken, Abbilder*). It is obvious that these mental images arise only from sensations. It would seem that the position of "philosophic Marxism" ought to be known to everyone who speaks of it, especially to one who in the name of this philosophy writes about it. But because of the great confusion which our Machians have brought with them, it is very urgent to repeat things which are generally known. We turn to the first paragraph of *Anti-Dühring* and we read: "the things and their mental reflection . . ."[3]; or to the first paragraph of the philosophic part which reads thus: "But how are these subjective principles derived? [The question here is about the fundamental principles of all knowledge]. From thought itself? No. These forms can never be created by thought nor derived from it but only from the external world. . . . Principles are not the starting points of investigation [as it is with Dühring who wishes to be a materialist, but who cannot consistently carry out materialism] but the conclusion of it; they are not to be applied to nature and history but are derived from them. Nature and Humanity are not steered by principles, but principles are, on the other hand, only correct insofar as they correspond to nature and history. That is just the materialistic conception of matter, and the opposite, that of Dühring is the idealistic conception. It turns things upside down and constructs a real world out of the world of thought" (p. 55). Engels, to repeat, applies this "sole materialistic view" everywhere and without exception, relentlessly attacking Dühring for the least deviation from materialism to idealism. Those who will pay the slightest attention in reading *Ludwig Feuerbach* and *Anti-Dühring* will find scores of examples in which Engels speaks of things and their reflection in the human brain, in our consciousness, reason, etc. Engels does not say that sensations or ideas are "symbols" of things, for a consistent materialist ought to use the term image, picture, or reflection instead of "symbol," as we shall prove when we come to consider the question. The argument here, however, is

[3] Friedrich Engels: *Socialism, Utopian and Scientific*, Chicago, 1907 [part of the author's larger work, *Herrn Eugen Dühring's Umwälzung der Wissenschaft*, usually referred to as *Anti-Dühring.—Ed.*]

not at all about this or that formulation of materialism, but about the opposition of materialism to idealism, about the difference of two trends of thought in philosophy, that is, whether we are to proceed from things to sensations and thought, or from sensations and thought to things? Engels sides with the first,—materialism; Mach, with the second,—idealism. No tricks, no sophistry (with which we shall often meet in his later works), will obscure the clear and undisputed fact that Ernst Mach's doctrine of things as complexes of sensations, is subjective idealism and a tedious repetition of Berkeleianism. If with Mach, bodies are to be reduced to "complexes of sensations," or with Berkeley, to "combinations of sensations," then from this it inevitably follows that the "world is my idea." Starting with such a supposition it is impossible to arrive at the existence of other selves except myself—and this is the purest solipsism. Much as Mach, Avenarius, Petzoldt and the others renounced solipsism, they were unable to get rid of it without falling prey to logical contradiction. To make this fundamental element of the philosophy of Machism still clearer, we shall adduce a few more citations from Mach's works. Here is a sample from the *Analysis of Sensations*:

"We see an object having a point S. If we touch S, that is, bring it into connection with our body, we receive a prick. We can see S, without feeling the prick. But as soon as we feel the prick we find S on the skin. The visible point, therefore, is a permanent nucleus, to which the prick is annexed, according to circumstances, as something accidental. From the frequency of analogous occurrences we ultimately accustom ourselves to regard all properties of bodies as 'effects' proceeding from permanent nuclei and conveyed to the ego through the medium of the body; which effects we call sensations. . . ." [4]

In other words: people "accustom" themselves to materialism, to consider sensations as the result of the effect of bodies, things, or nature on our sense-organs. This harmful—for the philosophic idealists—"habit," acquired by mankind and natural science, is not at all to the liking of Mach, and he tries to break it. "By this operation, however, these nuclei are deprived of their entire sensory content and converted into a bare abstract symbol." An old song, most honorable Professor! This is a literal repetition of Berkeley who said that matter is a bare abstract symbol. It is obviously Ernst

[4] *The Analysis of Sensations,* Chicago, 1914, p. 12.

Mach who is laid bare, for since he does not recognise the "sensory content" to be an objective reality, existing independently of us, then the sensory content remains a "bare abstract" self, an italicised and capitalised *Self* similar to "the insane pianoforte, which imagined that it was the sole existing thing in this world." If the "sensory content" of our sensations is not the outer world, then nothing exists save the bare self that indulges in empty philosophic trifling. A stupid and fruitless occupation! "The assertion, then, is correct that the world consists only of our sensations. In which case we have knowledge *only* of sensations, and the assumption of the nuclei referred to, or of a reciprocal action between them, from which sensations proceed, turns out to be quite idle and superfluous. Such a view can only fit in with a half-hearted realism or a half-hearted philosophical criticism." (*Ibid.*)

We cited the sixth paragraph of the "anti-metaphysical utterance" of Mach in full. It is an absolute plagiarism from Berkeley. There is not a trace here of genuine thought, unless we are to regard the expression, "we perceive our perception" as original. From this it may be inferred that the "world consists of my sensations." The word "our," used by Mach, instead of "my" is illegitimately employed by him. By this word alone Mach betrays that "half-heartedness" of which he accuses others. For if the "assertion" of the existence of the outer world is an "idle" speculation, if the statement about the independent existence of the needle and of the interaction between my body and its point is "idle and superfluous," then the "assertion" of the existence of other selves is still more idle and superfluous. That means that only *I* exist, and our fellow men as well as the outer world come under the category of idle "nuclei." Holding such a doctrine one ought not speak about "our" sensations; but as Mach does speak about them, it only betrays his own half-hearted method. It proves that his philosophy is a jumble of idle and shallow words in which he himself does not believe.

The following is a good example of Mach's confusion. In § 6 of Chapter II of the *Analysis of Sensations* we read: "If I can imagine that, while I am having sensations, I myself or someone else could observe my brain with all the necessary physical and chemical appliances, it would then be possible to ascertain with what processes of the organism sensations of a particular kind are connected" (p. 242).

Well, then, does it mean that our sensations are connected with

a particular kind of processes which take place in the organism in general, and in our brain in particular? Mach very definitely admits this to be the case (it would be quite a task not to admit it from the standpoint of natural science!). But is this not the very same "assertion" about the very same "nuclei and their interaction" which our philosopher declared to be idle and superfluous? We are told that bodies are complexes of sensations; to go further than that, to regard sensations as a product of the effect of bodies upon our sense-organs is, in Mach's opinion, metaphysics, an idle and superfluous assertion, etc.,—an opinion similar to Berkeley's. But the brain is a body, you will say. Yes, that means that the brain also is no more than a complex of sensations. And that means that with the help of the complexes of sensations I (and I am also nothing else than a complex of sensations) perceive the complex of sensations. What a wonderful philosophy! At first to recognise sensations "as the real world elements" and on this to build an "original" Berkeleianism, and then secretly to import opposite views that sensations are connected in the organism with particular kinds of processes. Are not these "processes" connected with the exchange of matter between the "organism" and the external world? Could this exchange occur, if the sensations of the organism did not present an objectively correct picture of this external world?

Mach does not ask himself such embarrassing questions. He jumbles together fragments of Berkeleianism with views of natural science that instinctively adhere to the materialist theory of knowledge. . . . In the same paragraph Mach writes: "It is sometimes even asked whether inorganic 'matter' has sensation . . ." Does this mean that there is no question about organic matter having sensation? Does it mean that sensation is not something primary but that it is one of the properties of matter? Oh! yes,—Mach leaves out all the absurdities of Berkeleianism! "The question is natural enough, if we start from the generally current physical conception which represents matter as the immediately and undoubtedly experienced reality out of which everything, inorganic and organic, is constructed." Let us keep in mind Mach's valuable admission that the habitual and widely spread physical notions regard matter as an immediate reality, of which reality only one variety (organic matter) possesses the well defined property of sensation. "For sensation must either arise suddenly somewhere

or other in this structure, or else have been present in the foundation-stones from the beginning. From our point of view the question is merely a perversion. Matter is for us not what is primarily given. What is primarily given is, rather, the elements which, when standing to one another in a certain known relation are called sensations."

What is primarily given, then, is sensation, though in organic matter it is "connected" only with a particular kind of process! By making such an absurd statement, it seems as if Mach condemns materialism ("the generally current physical conception") because the question as to why and how sensation "arises" has not been decided! This is a sample of the "refutation" of materialism by the fideists and their sycophants. Can any philosophy "solve" questions if there has not been collected a sufficient amount of data for its solution? Does not Mach himself say in the very same paragraph, "As long as this problem [*i. e.*, what is the lower limit of sensation in the organic world?] has not been solved in even a single special case, no decision of the question is possible"?

The difference between materialism and Machism in this particular question is thus reduced to the following. Materialism in full agreement with natural science, takes matter as the *prius*, regarding consciousness, reason and sensation as derivative, because in a well expressed form it is connected only with the higher forms of matter (organic matter). It becomes possible, therefore, to assume the existence of a property similar to sensation "in the foundation-stones of the structure of matter itself." Such, for example, is the supposition of the well-known German naturalist Ernst Haeckel, the English biologist Lloyd Morgan and others, not to speak of Diderot's conjecture, mentioned above. Machism clings to the opposite, idealistic viewpoint, which at once leads to an incongruity since, in the first place, sensation is taken as the primary entity in spite of the fact that it is connected with particular kinds of processes (in matter organised in a particular way); and, in the second place, the hypothesis that bodies are complexes of sensations is here destroyed by the assumption of the existence of other living beings and, in general, of other "complexes" besides the given great Self.

The word "element," which many a naïve person accepts (as we shall later see) as a new discovery, in reality only obscures the question by a meaningless and misleading term which has not the least

bearing upon the solution of the problem. This term is misleading because there still remains so much to investigate, so much to find out about how matter, devoid of sensation, is related to matter which, though composed of the same atoms (or electrons), is yet endowed with a definite faculty of sensation. Materialism, by putting clearly the problem, gives impetus to continual experimentation thus making possible its solution. Machism, one variety of muddled idealism, by means of the trifling word "element," entangles this problem and sidetracks it.

In the last philosophic work of Mach there is one place that clearly betrays this idealistic trick. In his *Erkenntnis und Irrtum* we read: "While there is no difficulty in constructing any physical element out of sensation, which is a psychical element, it is impossible to imagine how we could compose a psychical experience out of elements that are current in modern physics, out of mass and motion, rigid elements that are only convenient for this special science." [5]

Engels speaks very definitely about the rigidity of the views of many modern naturalists and about their metaphysical (in the Marxian sense, anti-dialectical) conceptions. We shall see how Mach failed in this particular point either because he was not able to grasp it, or because he was ignorant of the relationship of relativism to dialectics. But for the present we shall not concern ourselves with it. It is important for us to note here the definiteness with which Mach's idealism comes to the fore in spite of the confused, supposedly new terminology. Now we have the assurance that there will be no difficulty in building up physical elements out of sensations, that is from psychical elements! Such constructions are, indeed, not difficult, for they are purely verbal constructions, empty scholasticisms which leave a loophole for fideism. No wonder, then, that after this discovery Mach dedicates his works to the immanentist school, no wonder that the followers of that school, the adherents of the most reactionary philosophic idealism, embrace Mach's theory. The "recent positivism" of Ernst Mach arrived only two hundred years too late. Berkeley gave numerous proofs that out of sensations, out of "psychical elements," one can "build" nothing but *solipsism!* We have already learned something about the materialism, with which Mach contrasts his own views without naming the enemy frankly and explicitly, from the examples of

[5] E. Mach: *Erkenntnis und Irrtum*, 2 Auflage, p. 12.

Diderot. The doctrine consists not in the derivation of sensation from the movement of matter or in the identification of sensation with the movement of matter, but in the recognition that sensation is one of the properties of matter in motion. On this particular question Engels held Diderot's views. Engels opposed the "vulgar" materialists, Vogt, Büchner and Moleschott because they assumed that thought is secreted by the brain as bile is secreted by the liver, holding that in this matter, they were confused. But Mach who contrasts his views with those of the materialists, ignores, of course, all the great materialists—Diderot, Feuerbach, Marx and Engels—just as all other official professors of the official philosophy do.

To characterise the prime and fundamental conception of Avenarius let us take his first independent philosophic work.[6] Bogdanov in his *Empirio-Monism* (Book 1, 2nd ed., 1905, p. 12, *note*) says that "in the development of Mach's views, the starting point was philosophical idealism, while the realistic tinge is characteristic of Avenarius from the very start." Bogdanov said this for he took Mach at his word;[7] but in vain, for his assertion is diametrically opposed to the truth. On the contrary, the idealistic view of Avenarius is so prominent in his work of 1876, that he was himself compelled to admit it in 1891. In the Introduction to *Der Menschliche Weltbegriff* Avenarius says: "He who read my first systematic work, *Philosophie*, etc., must surely have presumed that I would attempt to treat the questions of the *Kritik der reinen Erfahrung* from the idealist standpoint," [8] but "the sterility of idealism" compelled me to "doubt the correctness of my previous attitude" (*Ibid.*, p. x). This starting point of Avenarius is universally acknowledged in philosophic literature. Of the French writers I shall refer to Couwelaert who says that in the *Prolegomena* the philosophical standpoint of Avenarius is that of "monistic idealism." [9] Of the German writers I shall name Rudolph Willy, Avenarius' disciple, who says that "Avenarius—in his youth, especially in his work of 1876—was totally under the influence of the so-called epistemological idealism." [10]

[6] *Philosophie als Denken der Welt gemäss dem Princip der kleinsten Kraftmasses*, (*Prolegomena zu einer Kritik der reinen Erfahrung*, 1876).

[7] *Cf. Analysis of Sensation*, p. 362.

[8] *Der menschliche Weltbegriff*, 1891, Introduction, p. xi.

[9] F. Van Couwelaert: *L'empiriocriticisme* in "Revue neoscholastique," 1907, Feb., p. 51.

[10] Rudolph Willy: *Gegen die Schulweisheit, Eine Kritik der Philosophie*, München, 1905, p. 172.

It would be ridiculous to deny idealism in Avenarius' *Prolegomena*, when it openly states that "only sensation can be thought of as existing" (pp. 10 and 65 of the second German edition). That is how Avenarius himself presents the content of § 116 of his work. "We admitted," he says, "that the existing (*das Seiende*) is a substance endowed with sensation; the substance falls off . . . ["it is more economical," as you see, "there is less effort" in thinking that there is no "substance" and that there exists no external world!] there remains sensation; we must then regard what exists as sensation through and through."

Sensation, then, exists without "substance," thought without brain! Are there really such philosophers who are capable of defending this brainless philosophy? Yes, there are! And Professor Richard Avenarius is one of them. We must pause for a while on the argument advanced in defence of this philosophy, difficult as it is for a normal person to take it seriously. Here in §§ 89 and 90 of the same work is Avenarius' argument: ". . . The position that motion causes sensation is based on illusory experience alone. This experience, the separate act of which is perception, consists in the supposed fact that sensation arises in a certain kind of substance (brain) as a result of the transferred motion (excitation) and with the help of other material conditions (*e. g.*, blood). However, regardless of the fact that this generation was never in itself observed, an empirical proof is at least necessary to show that sensation which is assumed to be caused in a certain substance by the transferred motion, did not already exist in the substance in one way or another; so that the appearance of sensation should not be interpreted in any other way but as a creating act on the part of the transferred action. Thus only by the proof that where we have now a sensation there was none before, not even a minimal one, is it possible to ascertain the fact which, denoting as it does some act of creation, contradicts the rest of experience and radically changes our conception of nature. But it is impossible to obtain such proof through any experience; on the contrary, the notion of a state of substance which, previously deprived of sensation, now begins to perceive, is no more than a hypothesis. And such hypothesis only complicates and obscures our knowledge instead of simplifying and clarifying it.

"Should the experience, which assumes that a transmitted motion is capable of causing sensation in a substance that begins to perceive

from this moment on, prove itself illusory upon more intimate acquaintance, then there would still remain sufficient material in the content of the experience to ascertain at least the relative origin of sensation from conditions of motion. It might appear that the amount of sensation, which was latent or minimal, or which did not appear to our consciousness before, now, due to the transmitted motion, frees itself, becomes more intense, or becomes known. However, even this bit of the remaining content of experience is no more than illusory. Were we even in the position of ideal observers who could trace the outgoing motion from the moving substance A which, transmitted through a series of intermediate centres, reaches the substance B which is endowed with sensation, we would at best find that sensation in substance B developed simultaneously with the reception of the incoming motion, but we would not find that this occurred as a consequence of the motion."

We have purposely quoted this refutation of materialism by Avenarius in full, in order that the reader might see with what sophistry "recent" empirio-critical philosophy operates. We shall compare the argument of the idealist Berkeley with the *materialist* argument of Bogdanov, as a kind of punishment for the latter's betrayal of materialism!

In bygone days, nine years ago, when Bogdanov was still partly "a naturo-historical materialist" (that is, an adherent of the materialist theory of knowledge, which the preponderant majority of contemporary naturalists instinctively hold), when he was only partly confused by the befuddled Ostwald, he wrote: "From ancient times to the present, the classification of the facts of consciousness into three categories has still held true for descriptive psychology, namely, the domain of sensations and ideas, the domain of emotion and the domain of excitations . . . To the first category belong the images of phenomena of the outer or inner world, that are taken by themselves in consciousness. . . . Such an image is called a "sensation" if it is directly caused by the intermediation of the sense-organ with its corresponding external phenomenon." [11] And a little farther: "Sensation . . . arises in consciousness as a result of a certain external impulse transmitted by the external sense-organs" (p. 222). Or "sensation is the foundation of mental life; it is the immediate

[11] A. Bogdanov: *The Basic Elements of the Historical Outlook on Nature*, St. Petersburg, 1899, p. 216 (in Russian).

connection with the outer world" (p. 240). "In the process of sensation the transformation of energy of external excitation into a fact of consciousness takes place at each step" (p. 133). And even in 1905 when, due to the benevolent assistance of Ostwald and Mach, Bogdanov abandoned the materialist viewpoint for the idealist, he still wrote (because of impaired memory!) in his *Empirio-Monism:* "As is well known, the energy of external excitation is transformed at the nerve endings into a 'telegraphic' form of the nervous current, as yet insufficiently elaborated yet devoid of mysticism. This energy reaches the neurones that are located in the so-called 'lower' centres—ganglial, spinal, subcortical, etc." (Book 1, 2nd ed., 1905, p. 118).

For every scientist, who is not led astray by professorial philosophy, as well as for every materialist, sensation is nothing but a direct connection of the mind with the external world; it is the transformation of energy of external excitation into a mental state. This transformation has been observed by each of us a million times. The sophistry of idealist philosophy consists in that it takes sensation not as a connection of the mind with the outer world but as a screen, as a wall which separates the mind from the outer world; in that it is taken not as an image corresponding to the perception of the external phenomenon but as the "only entity." Avenarius accepted the slightly changed form of this old sophistry which had already been worn thin by Bishop Berkeley. As we do not know all the conditions of the constantly observed connection of sensation with matter organised in a certain way, we recognise sensation alone as existing. The argument of Avenarius may be reduced to this.

To be done with the characterisation of the fundamental idealist assumptions of empirio-criticism, we shall take the testimony of the English and French representatives of this philosophic tendency. Mach explicitly says of Karl Pearson, the Englishman, that he agrees with his epistemological views. "Reference may first be made to the expositions of Karl Pearson which agree with my own, save in terminology."[12] Pearson in turn agrees with Mach.[13] For Pearson "real things" are "sense impressions." He declares the recognition of things outside the boundaries of sense-impressions to be metaphysics. Knowing neither Feuerbach, nor Marx and Engels, Pearson fights materialism with great determination; his

[12] *Die Mechanik,* etc., p. ix.
[13] Karl Pearson: *The Grammar of Science,* 2nd ed., London, 1900, p. 326.

arguments do not differ from those that were illustrated above. But to Pearson the desire to appear as a materialist is foreign—this is a specialty of the Russian Machians. He is incautious to such an extent . . . that without inventing "new" names for his philosophy, he simply considers his views as well as those of Mach as "idealist" (*ibid*, p. 326). His theoretic genealogy he directly traces to Berkeley and Hume. The philosophy of Pearson, as we shall see time and again, excels that of Mach in integrity and thoughtfulness.

With the French physicists, especially Pierre Duhem and Henri Poincaré, Mach expresses his solidarity.[14] We shall treat the confused and inconsistent philosophic doctrines of these writers in the chapter on new physics. Here we shall note only that for Poincaré things are "groups of sensations"[15] and that a similar view is held by Duhem.[16]

We shall see now how Mach and Avenarius, having admitted the idealist character of their original views, corrected them in their subsequent works.

2. *"The Discovery of the World Elements"*

It is under such a title that Friedrich Adler, an instructor at the University of Zürich, probably the only German author who was anxious to supplement Marx with Machism, wrote about Mach.[17] We must give the naïve instructor his due, and admit that with his naïveté he rendered a service to Machism, that did more harm than good. The question was put by him point-blank,—did Mach really "discover the world-elements"? If he did, only backward and ignorant people could henceforth remain materialists. Or does this discovery signify Mach's return to the old philosophic errors?

We saw that Mach in 1872 and Avenarius in 1876 held a purely idealist view; for them reality meant sensation. In 1883 *The Science of Mechanics* appeared, and in the preface to the first edition Mach refers to Avenarius' *Prolegomena*, greeting the ideas that

[14] *Analysis of Sensation*, p. 4; *cf.* Intr. to *Erkenntnis und Irrtum*, 2 ed.

[15] Henri Poincaré: *The Value of Science*, New York, 1907.

[16] P. Duhem: *La theorie physique son objet et sa structure*, pp. 6, 10, 1906.

[17] Friedrich W. Adler: *Die Entdeckung der Weltelemente* (Zu E. Machs 70 Geburtstag, *Der Kampf*, 1908, No. 5, tr. in *The International Socialist Review*, 1908, No. 10).

were "closely related" to his own. Here are the arguments in defence of these elements: "All physical knowledge can only mentally represent and anticipate compounds of those elements we call sensations. It is concerned with the connection of these elements. Such an element, say the heat of a body A, is connected not only with other elements, say with such whose aggregate makes up the flame B, but also with the aggregate of certain elements of our body, say, with the aggregate of the elements of nerve N. The connection of A and B is a problem of *physics*, that of A and N, a problem of *physiology*. Neither is alone existent; both exist at once. Only provisionally can we neglect either. Processes, thus, that in appearance are purely mechanical, are, in addition to their evident mechanical features, always physiological." [18] We see the same in the *Analysis of Sensations:* ". . . Wherever the reader finds the terms 'sensation,' 'sensation-complex,' used alongside of or instead of the expressions 'elements,' 'complex of elements,' it must be borne in mind that it is only in the connection and relation in question, only in their functional dependence that the elements are sensations (namely, the relations A, B, C to K, L, M, that is 'complexes which we have called the world of matter,' we find as parts, not only our own body, K, L, M . . . but also the bodies of other persons or animals.) In another functional relation they are at the same time physical objects.[19] A color is a physical object as soon as we consider its dependence, for instance, upon its luminous source, upon other colours, upon temperatures, upon spaces and so forth. When we consider, however, its dependence upon the retina (the elements K, L, M . . .), it is a psychological object, a sensation" (*ibid,* p. 17).

The discovery of the world elements, then amounts to this:

(1) That the existing is declared to be sensation.

(2) That the sensations are called elements.

(3) That elements are divided into physical and psychical; the latter is that which depends upon the human nerves and upon the human organism in general; the former does not depend upon it.

(4) That the relations of physical and psychical elements are declared not to exist separately from each other, but only together.

(5) That it is possible only for a moment to divert one's attention from one or the other relation.

[18] *Science of Mechanics,* p. 507.
[19] *Analysis of Sensations,* p. 16.

(6) That the "new" theory is declared to be free from "one-sidedness." [20]

To be sure, there is no one-sidedness about it. It is, however, the most disconnected mess of contradictory philosophic conceptions. Once you start with sensation you cannot rid your idealism of the vestiges of a one-sided theory by the use of the term "element" alone. You are only complicating matters, and in a cowardly manner, running away from your own theory. In words you are eliminating the contrast between the physical and psychical,[21] between materialism (which takes matter as its *prius*) and idealism (which takes mind, consciousness, sensation as the *prius*); in acts you at once secretly restore this contrast and retreat from your original position. For, if elements are sensations, you may not even for a moment accept the existence of the elements without their dependence on our nervous system and on our consciousness. But once you admit such physical objects independently of our nervous system and our sensations—objects that cause sensations only by acting upon my retina—you are disgracefully abandoning your "one-sided" idealism and are accepting "one-sided" materialism! If colour is a sensation dependent upon the retina (as natural science compels you to admit!), then the light rays falling on the retina produce the sensation of colour. That means that independent of us and our consciousness there exists the vibration of matter, of ether waves of a certain length and certain velocity which, acting upon the retina, produce in us the sensation of one colour or another. That is how natural science regards it. The various sensations of one colour or another are explained by science in terms of various lengths of light waves existing outside of the human retina and independently of man. Such is the view of materialism; that matter, acting on our sense-organs, produces sensation. Sensation depends upon the brain, nerves, retina, etc., upon matter organised in a certain way. The existence of matter does not depend upon sensation. Matter is of primary nature. Sensation, thought, consciousness are the highest products of matter organised in a certain way. This is the doctrine of materialism, in general, and of Marx and

[20] Mach says in the *Analysis of Sensation*: "Usually, these elements are called sensations. But as vestiges of a one-sided theory inhere in that term, we prefer to speak simply of elements, as we have already done" (p. 22).

[21] "The antithesis between the ego and the world, between sensation (appearance) and thing, then vanishes, and we have simply to deal with the connection of the elements." (*Ibid.*, p. 14.)

Engels, in particular. Mach and Avenarius smuggled in materialism by the term "element" which thus supposedly rids their theory of the one-sidedness of subjective idealism, leaves room for the dependence of the psychical on the retina, the nerves and so forth, as well as for the independence of the physical from the human organism. The stratagem with the term "element" is the most contemptible sophistry, for reading Mach and Avenarius, the materialist would immediately ask the question: "what are the elements?" It is, indeed, very childish to think that the invention of a new word will do away with the chief philosophic alignments. If "elements" are sensations, as all empirio criticists (Mach, Avenarius. Petzoldt and others) maintain,[22] their philosophy then is idealism which in vain tends to cover the nakedness of its solipsism by a garb of "objective terminology." If "elements" are not sensations, then no thought whatsoever can be attached to the "new" term, and they are parading with a mere bagatelle.

Take Petzoldt for instance, since his is the last word of empirio-criticism, as it is characterised by B. Lessevich, the outsanding Russian empirio-criticist.[23] Having defined elements as sensation, he says in the second volume of the work cited: "One must be on his guard not to take the term 'sensation' in the statement that 'sensations are world elements,' as indicating only something subjective and therefore something ethereal which thus transforms the ordinary picture of the world into an illusion." [24]

One usually speaks of matters which are most urgent to him! Petzoldt feels that the world "evaporates" (*verflüchtigt sich*) or becomes illusory, if the world-elements are regarded as sensations. And the good natured Petzoldt imagines that he helps matters by the clause, "that we must not take sensation as something subjective!" Is this not ridiculous sophistry! Can the situation be changed by "taking" sensation as sensation or by trying to stretch the meaning of the word? Would the fact that sensations are connected in us with a normally functioning nervous system vanish, merely because of such a change of words! Does the outer world exist independently of our perception? If you wish to evade

[22] Joseph Petzoldt: *Einführung in die Philosophie der reinen Erfahrung*, p. 113: "Elements are termed sensations in the ordinary sense of simple perceptions (*Wahrnehmungen*), irreducible to anything else."

[23] B. Lessevich: *What is Scientific* [read: fashionable, professorial, eclectic] *Philosophy?* St. Petersburg, 1891, pp. 229 and 247.

[24] Petzoldt, *op. cit.*, Bd. II, 1904, p. 329.

the situation other than by tricks, if you seriously wish to be "on your guard" against subjectivism and solipsism, then you must above all be wary of fundamental idealist assumptions; then you must change your idealist approach and go from the outer world to sensations instead of vice versa. But this is not sufficient; you must also throw overboard the empty ambiguity of the term "element" and simply say that colour is the result of the action of a physical object on the retina which is the same as saying that sensation is a result of the action of matter on our sense-organs.

Let us now take Avenarius. As to the question of the "elements," his last work [25] appears to be the most valid and important for the apprehension of his philosophy. The author, by the way, here gives a very "illuminating" table (Vol. XVIII, p. 410) the main part of which we reproduce here:

"Elements, complexes of elements:

"I. Things or appertaining to things . . . corporeal things.

"II. Thoughts or appertaining to thoughts (*Gedankenhaftes*) . . . incorporeal things, recollections and phantasies."

Compare with this what Mach says after all his comments on the "elements": [26] "Bodies do not produce sensations, but complexes of elements (complexes of sensations) make up bodies." Here you have the "discovery of the world-elements," that transcends the one-sidedness of idealism and materialism! At the beginning we were assured that the "elements" were something new, both physical and psychical at the same time, and then a little correction was secretly made; instead of the rude materialist differentiation of matter (bodies and things) and mind (sensations, recollections, phantasms) we are presented with the doctrine of the "most recent positivism" about elements corporeal and mental. Very little did Adler (Fritz) gain from "the discovery of the world-elements!"

In reply to Plekhanov, Bogdanov wrote in 1906: ". . . I cannot call myself a Machian in philosophy. In the general philosophic conception I borrowed from Mach only one thing—the notion of neutrality of the elements of experience in relation to the physical and psychical, and of dependence of these characteristics upon the connection of experience." [27] This is as if a religious man were to

[25] *Bemerkungen zum Begriff des Gegenstandes der Psychologie, Vierteljahrsschrift für wissenschaftliche Philosophie,* Vol. XVIII (1894) and XIX (1895)

[26] *Analysis of Sensation,* p. 29.

[27] *Empirio-Monism,* Bk. III, St. Petersburg, 1906, p. xli.

say—"I cannot consider myself an adherent of religion, for I have borrowed from it only one thing—the belief in God." This "one thing" which Bogdanov took from Mach is the chief error of Machism, the fundamental incorrectness of the entire philosophy. The deviations of Bogdanov from empirio-criticism, to which Bogdanov himself attributes so much weight, are really of secondary importance and do not pass the boundaries of detailed, private, individual differences between the empirio-criticists who are approved by Mach and who approve Mach (more of this later). Therefore, when Bogdanov showed irritation at being confused with Mach, he betrayed his failure to comprehend what it is which radically distinguishes materialism from what is common to Bogdanov and the rest of the Machians. It is of no importance in what manner Machism was developed, corrected or corrupted by Bogdanov. It *is* of importance how he deserted the materialist doctrine and hence condemned himself to inevitable confusion and idealist aberrations. In 1899, as we saw, Bogdanov held a correct position when he wrote: "The image of the man before me, which is given to me by sight, is a sensation." [28] Bogdanov made no effort to offer a criticism of his previous position. He blindly placed faith in Mach and began to repeat after him that the "elements" of experience are "neutral" in their relation to the physical and psychical. "As was established by recent positivist philosophy the elements of psychic experience," wrote Bogdanov in Book I of his *Empirio-Monism* (2nd ed., p. 90), "are similar to the elements of experience in general, for they are identical with the elements of physical experience." Or in 1906 (Bk. III, p. xx): "As far as idealism is concerned, must it be spoken of only upon the basis of the recognition of identity between the elements of physical experience and the elements or elementary sensations of psychical experience, when this is simply an indubitable fact?"

Here is the actual source of Bogdanov's philosophic inferences, a source which he shares with the rest of the Machians. One may and ought to speak of idealism if he regards sensations as identical with "the elements of physical experience" (that is the physical, external world, matter), for this is nothing else but Berkeleianism. There is not a trace here of the latest or positivist philosophy or of the "indubitable fact." It is merely the very old idealist sophistry. And were one to ask Bogdanov how he could prove the "indubitable

[28] *The Fundamental Elements*, etc., p. 216; *Cf.* with the above quotations.

fact" that sensations are identical with the physical, he would hear no other response save the eternal idealist song: "I perceive only my perception; the evidence of self-consciousness" (*die Aussage des Selbstbewusstseins*),[29] or; "in *our experience* [which testifies that "we are perceiving subjects"] sensation is given to us with more certainty than is substance," (*ibid.*, p. 55) and so forth, and so on. As an "indubitable fact" Bogdanov, following Mach, accepted a reactionary philosophic subterfuge, for in truth not one fact was or could be cited which would refute the view which holds that sensation is a reflection of the outer world—a view which was held by Bogdanov in 1899 and which is still held by contemporary science. The physicist Mach, in his idealist wanderings, strayed into a path different from that of "modern natural science." Concerning this important circumstance which was overlooked by Mach, we shall have a good deal to say afterwards.

One of the circumstances (besides the influence of Ostwald) which induced Bogdanov to leap from the natural materialism of science to the muddled idealism of Mach, was the teaching of Avenarius about dependent and independent series of experience. Bogdanov himself thus relates it in Book I of his *Empirio-Monism:* "Insofar as the data of experience are dependent upon the state of the given nervous system, they form the psychical realm of the given person; insofar, however, as the data of experience are taken *independently* of such a relation, we have before us the physical realm. Avenarius therefore characterises these two realms of experience as being constituted by dependent series and independent series of experience" (p. 18).

The trouble is that the doctrine of "independent series" is a surreptitious importation of materialism, which from the standpoint of a philosophy that maintains that bodies are complexes of sensations, that sensations are "identical" with physical "elements" is illegitimate, arbitrary, and eclectic. For having recognised that the source of light and light waves exist independently of men and their consciousness, that colour depends upon the action of these waves on the retina, as a matter of course they took the position of materialism and thus completely destroyed the "indubitable facts" of idealism with all "the complexes of sensations," elements and similar nonsense, discovered by recent positivism.

[29] Avenarius: *Prolegomena,* 2nd German ed., p. 56.

The trouble is that Bogdanov (together with the rest of the Russian Machians) took no pains to make a thorough study of the idealist views originally held by Mach and Avenarius, and so get to the roots of their fundamental ideas. He, therefore, failed to see that their subsequent attempts to surreptitiously smuggle in materialism were illegitimate and eclectic. Yet just as much as the idealist views originally held by Mach and Avenarius are generally acknowledged in philosophic literature, so is it universally accepted that their subsequent empirio-criticism tended to incline towards materialism. Couwelaert, the French writer quoted above, sees "monistic idealism" in Avenarius' *Prolegomena;* in *Der Kritik der reinen Erfahrung* (1888-90), he sees "absolute realism," and in *Der menschliche Weltbegriff* (1892), an attempt "to explain" the change of position. We call attention to the fact that the term "realism" is here employed in a sense contrary to idealism. Following Engels, I will use the term "materialism" in this sense, accounting it as the only correct one, especially since the term "realism" has been usurped by positivists and other muddleheads who vacillate between materialism and idealism. For the present it will suffice to note that Couwelaert had the established fact in view that in the *Prolegomena* (1876) "sensation" for Avenarius, is the only entity, while "substance"—according to the principle of "the economy of thought"!—is eliminated; and in *Der Kritik der reinen Erfahrung* the physical is taken as the domain of *independent series,* while the psychical and, consequently, sensations, as the domain of *dependent series.*

Avenarius' disciple, Rudolph Willy, likewise admits that Avenarius who was a "full-fledged" idealist in 1876, subsequently "reconciled" (*Ausgleich*) "naïve realism" (the above cited work) with this teaching. Naïve realism is the instinctive materialist viewpoint held by humanity which accepts the existence of the outer world independently of the mind.

Oscar Ewald, the author of the book on Avenarius [30] says that this philosophy combines the contradictory idealist and realist (he should have said "materialist") elements (not in Mach's sense but in the sense of popular usage). For example: "The absolute (consideration) would perpetuate naïve realism, the relative would declare exclusive idealism as constant." Avenarius calls the "abso-

[30] Oscar Ewald: *Richard Avenarius als Begründer des Empiriokriticismus,* Berlin, 1905, p. 66.

lute consideration" that which corresponds to Mach's connection of "elements" outside of the body.

But of considerable interest to us in this respect is the opinion of Wundt, who himself holds (as the majority of the above-mentioned writers) the confused idealist viewpoint. Wundt, more than others, devoted himself to an analysis of empirio-criticism. P. Yushkevich speaks thus about Wundt's conclusion: "It is interesting that Wundt considers empirio-criticism as the most scientific form of the latest type of materialism," [31] that is, of the type of materialism which sees in the spiritual the function of corporeal processes (and which we wish to add) stands—according to Wundt—between Spinozism and absolute materialism. ("Ueber naiven und kritischen Realismus" in *Philosophische Studien*, Bk. XIII, 1898, p. 334.)

It is true that Wundt's opinion is very interesting. But it is still more "interesting" to learn what Mr. Yushkevich's attitude is toward Wundt's philosophy. This is a typical instance of the relation our Machians bear to such works. The hero of Gogol, Petrushka, found it interesting that words could be constructed of letters.[32] Yushkevich read Wundt and found it "interesting" that Avenarius was accused by Wundt of materialism. If Wundt is wrong, why not refute him? If he is right why not admit that the position of materialism is contrary to that of empirio-criticism? Yushkevich finds what the idealist Wundt says "interesting," but this Machian regards it as a vain effort to go to the root of the matter (probably in accordance with the principle of "the economy of thought" . . .).

The point is, that having informed the reader that Wundt had accused Avenarius of materialism, Yushkevich failed to inform him that Wundt regards some aspects of empirio-criticism as materialism and others as idealism, and holds that the connection between the two is an artificial product. By this Yushkevich misrepresented the issue. Either this gentleman does not at all understand what he reads, or he was prompted by a base desire to be praised by Wundt, as if to say "you see, the official professors regard us not as muddleheads but as materialists."

The above-mentioned article by Wundt is a voluminous book

[31] *Materialism and Critical Realism*, St. Petersburg, 1908, p. 15.

[32] A character in Gogol's novel, *Dead Souls*. Petrushka liked the very process of reading printed matter, without getting the meaning of what he read. He read indiscriminately—a grammar book, a chemistry book, a prayer book, or a novel. He always marveled how words were formed from letters.

(more than 300 pages) which is primarily devoted to a detailed analysis of the immanentist school, as well as to an analysis of empirio-criticism. Why did Wundt connect these two schools? Because he considers them to be in close relationship; and this opinion, shared by Mach, Avenarius, Petzoldt and the followers of the immanentist school is, as we shall see later, perfectly correct. Wundt explains in the first part of this article that by "immanentists" are meant idealists, subjectivists and adherents of fideism. This, too, as we shall see later, is a perfectly correct opinion which, however, is expressed with a superfluous ballast of professorial erudition, with superfluous subtleties and clauses that can be explained by the fact that Wundt himself is both an idealist and deist. He reproaches the adherents of the immanentist school not because they hold fast to idealist and fideist views, but because they arrive at these great principles in a circuitous way. The second and third part of the article is devoted by Wundt to empirio-criticism. There he quite definitely shows that the very important theoretical principle of empirio-criticism—the interpretation of "experience" and the "essential co-ordination," of which we shall speak later—is, in his opinion, similar to that of the immanentists. (*Die empiriokritische in Uebereinstimmung mit der immanenten Philosophie annimmt*, p. 382). The other theoretical principles of Avenarius are borrowed from materialism. Regarded as a whole empirio-criticism is a "variegated mixture" (*bunte Mischung*, *ibid.*, p. 57), in which the "component elements are not well fused together" (p. 56).

In the jumble of materialist bits of the Avenarius-Mach mixture, Wundt singles out chiefly the teaching of the former about "independent vital series." He says that if you start from the "system C" (that is how Avenarius, being a great hand at an erudite play of terms, names the human brain or the nervous system in general) and if the mental is for you a function of the brain, then this "system C" is a "metaphysical substance and your doctrine is materialism" (*ibid.*, p. 64). Many idealists and agnostics (Kantians and Humeans included) call the materialists metaphysicians, because to them the materialists' recognition of the existence of the outer world independently of human mind is equivalent to transcending the boundaries of possible experience. Concerning the incorrectness of this terminology we shall speak later when we come to the question. Here it is important to note that the recognition of

the "independent" series by Avenarius (and also by Mach, who expressed the same idea in different words), is according to the general admission of philosophers of various tendencies, an appropriation from materialism. If you start with the presupposition that everything existing is sensation or that bodies are complexes of sensations, you cannot, without destroying your ultimate principles, all "your" philosophy, come to the conclusion that the physical exists independently of us, and that sensation is a function of matter organised in a certain way. Mach and Avenarius in their philosophy combine idealist assumptions with individual materialist inferences just because this theory is an instance of that "eclectic hodge-podge" of which Engels speaks with contempt.[33] They did not deserve better treatment.

In the last philosophic work of Mach, *Erkenntnis und Irrtum*, this eclecticism is especially prominent. We have already seen that Mach there declared: "There is no difficulty in constructing any physical element out of sensation, *i. e.*, out of psychical elements"; and in the same book we read: "The dependencies outside of U [Umgrenzung, that is, "the spatial boundary of our body," p. 8] is the subject matter of physics in the broad sense of the term" (p. 323). "To obtain those dependencies in a pure state it is necessary as much as possible to eliminate the influence of the observer, that is, those elements that lie within U." He set out to construct physical elements from psychical elements, and yet ends up with the result that physical elements lie beyond the boundary of psychical elements, "which are within our body!" What a remarkable philosophy this is!

Another example: "An ideal (*vollkomenes*) gas, an ideal liquid, an ideal elastic body—do not exist; the physicist knows that his fiction only approximates the facts and deliberately simplifies them; he is aware of the divergence which cannot be eliminated" (p. 418).

[33] In the introduction to his *Ludwig Feuerbach*. These words of Engels refer to the German professorial philosophy in general. The followers of Mach, anxious to be Marxians yet unable to grasp the meaning and content of this thought of Engels, sometimes hide themselves beyond this miserable excuse: "Engels did not know Mach as yet." (Fritz Adler.) On what is this opinion based? On the fact that Engels does not quote Mach and Avenarius? There are no other grounds, and this ground is good for nothing, for Engels does not call any of the eclectics by name. It is hardly likely that Engels did not know Avenarius, who had been editing a quarterly of "scientific" philosophy from 1876 on.

What divergence (*Abweichung*) is meant here? The divergence of what from what? Thoughts (physical theory) from facts? And what are thoughts and ideas? Ideas are "marks of sensations" (p. 9). And what are facts? Facts are "complexes of sensations." Well, then, that means that the divergence of the marks of sensations from the complexes of sensations cannot be eliminated.

What does all this mean? It means that when Mach forgets his own theory, and, begins with the various physical problems, he plainly speaks as a materialist without idealist twists. All "the complexes of sensations" and the entire stock of Berkeleian wisdom quickly vanish. The theory of the physicists proves to be a reflection of bodies, liquids, gases existing without and independently of us. This reflection is, of course, approximate, but to call this approximation or simplification "wilful" is erroneous. Sensation, in actuality is regarded by Mach just as it is regarded by the whole of natural science (when it is not "purified" by the disciples of Berkeley and Hume) as an image of the outer world. Mach's own theory is subjective idealism, and when a moment of objectivity is required, he unceremoniously adopts in his arguments the contary principles of the materialist theory of knowledge. Eduard Hartmann, the consistent idealist and reactionary in philosophy, whose sympathy was enlisted by the Machians in their controversy with the materialists, is not far from the truth when he says that the philosophic position of Mach is a "mixture of naïve realism and absolute illusionism."[34] The doctrine that bodies are complexes of sensations, etc., is absolute illusionism, solipsism; for, according to this doctrine, the world is nothing but my illusion. The arguments of Mach which have been discussed here, together with many others in his fragmentary discourses, express the point of view of so-called "naïve realism,"—the theory of knowledge that has been unconsciously and instinctively taken over by the scientists from the materialists.

Avenarius and those professors who trod in his footsteps, attempt to cover this hodge-podge by the theory of "essential co-ordination." We shall soon proceed with the examination of it, but we must first complete the alleged accusation of Avenarius in materialism. Yushkevich, to whom Wundt's opinion seemed so interesting, although he was unable to comprehend it, was not sufficiently inter-

[34] Eduard von Hartmann: *Die Weltanschauung der modernen Physik,* Leipzig, 1902. p. 219.

ested himself or perhaps not sufficiently benevolent as to inform the reader how Avenarius' most devoted disciples and successors reacted against this accusation. This is extremely necessary in order to clarify matters, especially if we are interested in the question of the relation of materialism, Marxian philosophy, to the philosophy of empirio-criticism. And if Machism will prove to be a mixture of materialism and idealism, then it will be important to learn whither this current flowed after the official idealists began to discountenance it because of its concessions to materialism.

Wundt, by the way, was answered by two of the most orthodox disciples of Avenarius, Petzoldt and Carstanjen. Petzoldt, with proud indignation, rejected the accusation of being a materialist, something which is considered a stigma upon a German Professor, and referred (what do you think?) to Avenarius' *Prolegomena*, as the place where the concept of substance had supposedly been annihilated! Indeed, a convenient theory when one can refer to it as both a purely idealist work and an arbitrary admission of materialist assumptions! "Avenarius' *Kritik der reinen Erfahrung*, to be sure, does not contradict materialism," wrote Petzoldt, "but neither does it contradict the opposite spiritualist doctrine." [35] What an excellent defence! This is exactly what Engels meant by "miserable eclectic hodge-podge." Bogdanov, who refuses to call himself a Machian and who wishes to be considered a Marxist (in philosophy), follows Petzoldt. He asserts "that empirio-criticism is concerned neither with materialism nor with spiritualism, nor with any metaphysics in general," [36] that "truth . . . does not lie in the 'golden mean' between the conflicting tendencies [of materialism and spiritualism], but lies outside of both." [37] That which appeared to Bogdanov as truth is in fact confusion, a vagrant flitting between materialism and idealism.

Carstanjen, replying to Wundt, said that he absolutely rejects this "foisting of a materialist element upon the doctrine of pure experience." [38] "Empirio-criticism is scepticism in relation to the content of the concepts." There is a grain of truth in this over-

[35] J. Petzoldt: *Einführung*, etc., Vol. I, pp. 351-2.
[36] *Empirio-Monism*, Bk. I, 2nd ed., p. 21.
[37] *Ibid.*, p. 93.
[38] Fr. Carstanjen: "Der Empiriocriticismus, zugleich eine Erwiderung auf Wundts Aufsatze," *Vierteljahrsschrift für wissenschaftliche Philosophie*, 1898, pp. 73 and 74.

emphasis upon the neutrality of Machism; the corrections of Mach and Avenarius of their original rendering of idealism can be reduced to admissions of partial concessions to materialism. Instead of the consistent standpoint of Berkeley—"the outer world is my sensation"—we sometimes get the Humean standpoint—"I reject even the question as to whether or not there is anything beyond my sensation." This admission of agnosticism inevitably condemns one to vacillation between materialism and idealism.

3. *Essential Co-ordination and "Naïve Realism"*

The doctrine of essential co-ordination is laid down by Avenarius in *Der menschliche Weltbegriff* and later in *Die Bemerkungen.* In the latter, Avenarius emphasises that the exposition differs somewhat from both the *Kritik* and *Der menschliche Weltbegriff*, yet the essence is the same.[39] Now the essence of this doctrine is the principle of "continual co-ordination (*i. e.*, the correlative connection) of the self and environment" (§ 146). "To use a philosophic expression," he says, "one can say 'self' and 'not self'! We always find 'this' and 'the other,' our self and environment, 'together' (*immer ein Zusammengefundenes*). No full description of the experienced (*des forgefundenen*) can reflect the environment without implying the existence of a self (*ohne ein ich*), whose environment it is, at least of the self that describes the experienced (§ 146). The self is called the central term of co-ordination; the environment, the counter term (*Gegenglied*)." [40]

Avenarius claims that by this doctrine he recognises the full validity of so-called naïve realism, that is, the ordinary unphilosophical, naïve view of the plain man who does not concern himself with the question whether he himself exists or whether the environment and the external world exist. Expressing his agreement with Avenarius, Mach also tries to appear as the defender of "naïve realism" (*Analysis*, etc., p. 51). The Russian Machians, without exception, relied upon Mach and Avenarius to the extent of believing that this was really a defence of "naïve realism." The self is acknowledged; so is the environment. What more is to be expected?

To decide with whom the highest degree of naïveté rests, we

[39] *Bemerkungen*, 1894, § 29.
[40] *Der menschliche Weltbegriff*, pp. 82-3 *ff.*

shall commence with a somewhat distant subject. Here is a popular dialogue between a philosopher and a reader:

"Reader: The existence of a system of things is prerequisite to the existence of anything else; from it consciousness will be inferred.

"Author: Now you are speaking in the spirit of professional philosophers . . . and not according to human understanding and actual consciousness. . . . Tell me, and think well before you answer me, can you behold an object within yourself or outside of yourself, independently of your consciousness of the thing?

"Reader: Upon sufficient reflection, I agree with you.

"Author: Now you are speaking from your heart. You must not then attempt to escape from yourself, and to apprehend more than you are able to, namely, consciousness *and* the thing, the thing *and* consciousness; or to be more exact do not try to intuit either of the two separately, but only the fusion of the two, the absolute subjective-objective and objective-subjective as distinct from either one in isolation."

Here is the whole essence of empirio-critical essential co-ordination, the latest defence of "naïve realism" by recent positivism! The idea of "continual" co-ordination is here stated very explicitly as if it were a defence of the habitual human conception, and not its philosophical perversion on the part of "the professional philosophers." This dialogue, as it happens to be, was taken from the works of a classical representative of subjective idealism, Johann Gottlieb Fichte. It was published in 1801.[41]

There is nothing in the teachings of Mach and Avenarius besides a paraphrasing of subjective idealism. The assumption that they rose above materialism and idealism, that they eliminated the conflicting views, started from things and proceeded to consciousness, or *vice versa*—is an empty pretence of a renovated Fichteanism. Fichte also imagined that he "inseparably" connected the "ego" and the "environment," the mind and the thing; that he "solved" the problem by the assertion that a person cannot escape from himself. In other words, the Berkeleian argument is repeated: I only perceive my perceptions, I have no right to assume "objects in themselves" outside of my perception. The different ways of ex-

[41] Johann Gottlieb Fichte: *Sonneklarer Bericht an das grössere Publicum über das eigentliche Wesen der neusten Philosophie. Werke*, Berlin, 1845, Vol. III, pp. 399-400.

pression—by Berkeley in 1710, by Fichte in 1801, or by Avenarius in 1892-4—do not in the least change the fundamental philosophic position of subjective idealism. "The world is my sensation"; the "non-ego" is "postulated" (is created, produced) by our "ego"; the thing is inseparably connected with consciousness; the continual co-ordination of our ego and the environment is the empirio-critical principle of co-ordination;—this is the same old trashy stock-in-trade of subjective idealism under a newly painted sign-board.

The reference to the "naïve realism," which is being defended by such a philosophy, is sophistry of a very cheap kind. The "naïve realism" of any healthy person, who is not an inmate of an insane asylum, or in the school of the idealist philosophers, consists in this, that he believes reality, the environment and the things in it, to exist independently of his perception,—independently of his conception of himself, in particular, and of his fellow men, in general. This same experience (not in the Machian sense, but in the common sense use of the word) which caused in us the invincible conviction that there exist independently of us other selves and not mere complexes of my perceptions of high, short, yellow and hard, this very same experience is responsible for our conviction that things, reality and environment exist independently of us. Our sensation, our consciousness is only a representation of the outer world. But it is obvious that although a representation cannot exist without someone for whom it is a representation, the represented thing exists independently of the one for whom it is a representation. The "naïve" belief of mankind is consciously taken by materialism as the basis of its theory of knowledge.

Does the characterisation made above of the "essential co-ordination" result from a materialist prejudice against Machism? Not at all. Specialists in philosophy, who cannot be accused of partiality towards materialism,—nay, who have nothing but hatred for it and who adhere to one system of idealism or another, agree that the essential co-ordination of Avenarius and his followers is an expression of subjective idealism. Wundt, for instance, whose "interesting" opinion was not understood by Yushkevich, explicitly states that the theory of Avenarius according to which it is impossible to describe fully the "given" or the "found" without dragging in a self, or an observer is a "confusion of the content of real experience with the argument about it." Wundt says that the laws and con-

cepts of natural science are the result of abstractions from its observation. "And such abstractions are possible because of the alleged necessity of taking into account the experiencing individual in every content of experience. This necessity, held by the empirio-critical philosophy in agreement with the adherents of the immanence school, is in reality an empirically groundless assumption arising from a confusion of the content of the real experience with a discussion about it" (*loc. cit.* p. 332). The adherents of the "immanence school" (Schuppe, Rehmke, Leclair, Schubert-Soldern), who have themselves voiced their hearty sympathy with Avenarius take as their starting point exactly this same idea of "inseparable" connection between subject and object. And Wundt, before analysing Avenarius, gave detailed proof that the immanentist philosophy was only a "modification" of Berkeleianism, that much as the adherents of the immanentist school deny their kinship to Berkeley, verbal differences ought not to conceal from us the "deeper content of their philosophic teaching," as Berkeleianism or Fichteanism.[42]

The English writer, Norman Smith, in analysing Avenarius' *Philosophie der reinen Erfahrung*, states this criticism with even more determination and straightforwardness.

"Most readers of Avenarius' *Menschliche Weltbegriff* will probably agree that, however convincing as criticism, it is tantalisingly illusive in its positive teaching. So long as we seek to interpret his theory of experience in the form in which it is avowedly presented, namely, as genuinely realistic, it eludes all clear comprehension: its whole meaning seems to be exhausted in negation of the subjectivism which it overthrows. It is only when we translate Avenarius' technical terms into more familiar language that we discover where the real source of the mystification lies. Avenarius has diverted attention from the defects of his position by directing his main attack against the very weakness which is fatal to his own theory.[43]

"Throughout the whole discussion the vagueness of the term experience stands him in good stead. Sometimes it means experiencing and at other times the experienced, the latter meaning em-

[42] *Loc. cit.*, § C: "The philosophy of immanence and the idealism of Berkeley," pp. 373 and 375; *Cf.* pp. 336 and 407. "Concerning the inevitability of solipsism from this standpoint" p. 381.

[43] Norman Smith: "Avenarius' Philosophy of Pure Experience," *Mind*, Vol. XV, 1906, pp. 27-28.

phasised when the nature of the self is in question. These two meanings of the term experience practically coincide with his important distinction between the absolute and the relative standpoints [I examined above the meaning of this distinction for Avenarius] and these two points of view are not in his philosophy really reconciled. For when he allows as legitimate the demand that experience be ideally completed in thought [the full description of the environment is completed ideally in thought about the observing self] he makes an admission which he cannot successfully combine with his assertion that nothing exists save in relation to the self. The ideal completion of given reality which results from the analysis of material bodies into elements which no human senses can apprehend [concerning the material elements discovered by natural science, the atoms, electrons, etc., and not the fictitious elements invented by Mach and Avenarius] or from following the earth back to a time when no human being existed upon it, is, strictly, not a completion of experience but only of what is experienced. It completes only one of the two aspects which Avenarius has asserted to be inseparable. It leads us not only to what has not been experienced but to what can never by any possibility be experienced by beings like ourselves. But here again the ambiguities of the term experience come to Avenarius' rescue. He argues that thought is as genuine a form of experience as sense-perception, and so in the end falls back on the time-worn argument of subjective idealism, that thought and reality are inseparable, because reality can only be conceived in thought, and thought involves the presence of the thinker. Not, therefore, any original and profound re-establishment of realism, but only the restatement in its crudest form of the familiar position of subjective idealism is the final outcome of Avenarius' positive speculation." [44]

The mystification of Avenarius who repeats fully Fichte's mistake is here excellently disclosed. The supposed elimination of the opposition between materialism (Smith erroneously uses the term realism) and idealism by means of the term "experience" proved at once to be a myth as soon as we proceeded to the analysis of concrete problems. Such is the problem of the existence of the earth prior to the appearance of man and any perceiving being. Here we will note that not only Smith, an opponent of his theory, but Schuppe, an adherent of the immanence school, who warmly

[44] *Op. cit.*, p. 29.

greeted the appearance of *Der menschliche Weltbegriff* as the confirmation of naïve realism, unmasks Avenarius and his fictitious "realism."[45] Schuppe fully agrees with the mystification of materialism which Avenarius presented under the name of "realism." "Such 'realism,'" he wrote to Avenarius, "I have always claimed with as much right as yourself, *hochverehrter Herr Kollege*, for it was insinuated against me, that I, an adherent of the immanence school, was a subjective idealist. . . . My conception of thought . . . is in full agreement with your *Kritik der reinen Erfahrung, hochverehrter Kollege*" (*ibid.*, p. 384). "But the self [*das Ich*, the abstract, Fichtean self-consciousness, a thought separated from the brain] gives two terms of the system of co-ordination, namely, connection and continuity. Hence, what you desired to eliminate you assume by implication" (p. 388). So Schuppe wrote to Avenarius. It is difficult to say who unmasks Avenarius, the mystifier, more sharply—Smith by his determinate and clear refutation, or Schuppe by his exalted review of Avenarius' concluding work. Wilhelm Schuppe's kiss in philosophy is no better than the kiss of Peter Struve or Menshikov in politics.[46]

Ewald, who praises Mach for his firm stand against materialism, speaks in a similar manner about the essential co-ordination: "If we declare the correlation of the central term and the counter term as an epistemological necessity from which there can be no retreat, then in whatever loud and large letters the word 'empirio-criticism' may be written on the signboard, it signifies only the espousal of a view that does not differ in the least from absolute idealism. [The term is incorrect; he should have said subjective idealism, for Hegel's absolute idealism is reconciled with the existence of the earth, nature, and physical universe independent of man, since nature is assumed as the 'otherness' of the absolute idea.] On the other hand, if we do not adhere strictly to this co-ordination and give the counter terms their independence, then all the familiar metaphysical

[45] *Cf.* Schuppe's letter to Avenarius *in Vierteljahrsschrift für wissenschaftliche Philosophie*, Vol. XVII, 1893, pp. 365-388.

[46] Struve, P. B. (born 1870), originally a Marxian theoretician and author of the Manifesto of the Russian Social-Democratic Labor Party, issued after its first congress in 1898, he later renounced his Marxism and gradually swung from liberalism to reaction and from 1925 has been editing an emigré monarchist paper in Paris; Menshikov, M. O. (born 1859), a well-known writer, and one of the editors of the semi-official *Novoye Vremia*, a reactionary daily published in St. Petersburg during the Tsarist régime. Menshikov's name is synonymous with the most reactionary type of old Russian journalism.—*Ed.*

possibilities at once arise, especially on the side of transcendental realism" (*loc. cit.*, pp. 56-57).

By metaphysics and transcendental realism, Friedlander, who is disguised under the name of Ewald, means materialism. Defending one of the varieties of idealism, he is in full agreement with the disciples of Mach and Kant that materialism is metaphysics—"from the beginning to the end a very wild metaphysics" (p. 134).

On the question of the "transcendence" and the view that materialism is metaphysics he is the associate of Bazarov and of all our Machians. It is important here to note how the shallow pseudo-erudite pretence to transcend idealism and materialism disappears, —important to note how the question is put without hope of reconciliation. "To give independence to the counter terms" means (to translate the pretentious language of Avenarius into common parlance) to regard nature and the external world as independent of human consciousness and sensation. Such a view is materialism. To build a theory of knowledge on the hypothesis of the inseparable connection of the object and human sensation [i. e., on "complexes of sensation" as being identical with bodies or "world elements" that are both mental and physical, or "co-ordination" and so forth] is to play into the hands of idealism. Such is the simple and inevitable truth which one can easily detect, if he looks for it beneath the tissue of sham philosophy which, due to the quasi-erudite terminology of Avenarius, Ewald, Schuppe and others, only complicates and obscures matters, thus making the public at large shun philosophy.

"The reconciliation" of Avenarius' theory with "naïve realism" led even his disciples to doubt it in the end. Willy, for example, said that the usual assertion that Avenarius embraced naïve realism should "be taken *cum grano salis.*" "As a dogma, naïve realism would be nothing but the belief in the thing-in-itself existing outside of us independently of our powers of sense-perception." [47] In other words, the only theory of knowledge that is really created by an actual and not fictitious agreement with "naïve realism" is, according to Willy, materialism. Willy, of course, rejects materialism. But he is forced to admit that Avenarius sometimes restores the unity of "experience," the unity of "self" and environment, in *Der menschliche Weltbegriff* by means of "a series of complicated and extremely artificial and arbitrary conceptions" (p. 171). *Der menschliche Weltbegriff*, being a reaction against the original ideal-

[47] R. Willy: *Gegen die Schulweisheit*, p. 170.

ist view of Avenarius, "is characteristic of the reconciliation between naïve realism of common sense and the theoretico-cognitive idealism of academic philosophy. That such a reconciliation will result in restoring the organic unity of basic experience [Willy calls it *Grunderfahrung*, that is, a basic experience—another new word!], I cannot assert" (p. 170).

What a valuable admission! The "experience" of Avenarius has failed to reconcile idealism with materialism. Willy seemingly repudiates the academic philosophy of experience, in order to put in its place a philosophy of "basic" experience which is confusion thrice confounded. . . .

4. *Did Nature Exist Prior to Man?*

We have already seen that this question appears to be a crucial one for the philosophy of Mach and Avenarius. Natural science positively asserts that the earth once existed in a state in which no man or any other living creature existed or could have existed. Inasmuch as organic matter is a later appearance, a result of a long evolution, it follows that there could have been no perceiving matter, no "complexes of sensations," no self which is "inseparably" connected with the environment, as Avenarius would like to have it. Hence, matter is primary, and mind, consciousness, sensation are products of a very high development. Such is the materialist theory of knowledge, which natural science instinctively holds.

The question arises whether the outstanding representatives of empirio-criticism take note of this contradiction between their theory and natural science. They do take note and ask themselves by what arguments they can remove this contradiction. Three attitudes to this question are of particular interest to materialism, that of Avenarius himself and those of his disciples, Petzoldt and Willy.

Avenarius tries to eliminate the contradiction with natural science by means of the theory of the "potential" central term in the co-ordination. As we already know, co-ordination is the "inseparable" connection of the self and the environment. To remove the obvious absurdity of this theory the concept of the "potential" central term is introduced. For instance, what should be done with the hypothesis of man's development from the embryo? Does the environment (the "counterpart of the term") exist, if the "central term" is

the embryo? The embryonic system C—Avenarius contends—is the "potential central term in relation to the future individual environment" (*Bemerkungen*, p. 140). The potential central term is never equal to zero, not only when there are no parents but also when there are only the "integral parts of the environment" capable of becoming parents (p. 141).

The co-ordination then is continual. It is essential for the empirio-criticist to assert this in order to save the fundamentals of his philosophy—sensations and their complexes. Even when there is no human being, the central term is not equal to zero; it only becomes the potential central term! It is surprising that there still are people who can take a philosopher seriously who produces such arguments. Even Wundt, who asserted that he is no enemy of metaphysics (that is, fideism), was compelled to admit "the obscure mystification of the term experience" by the application of the word "potential" which destroys whatever co-ordination there is (*loc. cit.*, p. 379).

Indeed, can one take co-ordination seriously when its continuity consists in one of its members being potential?

Is this not mysticism? Does this not lead to fideism? If it is possible to think of the potential central term in relation to a future environment, why not think of it in relation to the past environment, that is, after man's death? You will contend that Avenarius did not make this inference from his theory. Well, even this is not to the credit of his fallacious and reactionary theory, for it becomes thereby more cowardly. In 1894 Avenarius did not tell the whole tale, or perhaps feared to speak or even think about it consistently. Schubert-Soldern, however, referred to this theory in 1896 for theological purposes; in 1906 he won the approval of Mach, who said that Schubert-Soldern followed a direction which was "in close proximity to Machism" (p. 4). Engels had a perfect right to attack Dühring, the open atheist, for leaving loopholes for fideism in his philosophy. He had several times justly accused the materialist Dühring for his drawing of theological inferences at least in the seventies. And still there now are people who wish to be considered Marxists and yet carry to the masses a philosophy which is very near fideism! "It would seem," Avenarius wrote in *Bemerkungen*, "that from the empirio-critical standpoint natural science has no right to make queries about such periods of our present environment which precede the existence of man in

time" (p. 144). Avenarius goes on to say that "he who asks questions about it cannot avoid imaginatively projecting himself there in space and time [*sich 'hinzudenken'*]; what the natural scientist wants to know (though he is not clearly aware of it) is essentially this: How is the earth and the universe to be determined prior to the appearance of living beings or men? Only by imagining oneself in the rôle of a spectator, just as one follows the history of another planet or solar system from the basis of our earth, with the help of perfected instruments."

An object cannot exist independently of our mind. "We shall always imaginatively project ourselves as reason endeavouring to apprehend the object."

This theory of the necessity of "projecting" the human mind into any object and into nature prior to the emergence of man, is laid down by me in the first paragraph, in the words of the "recent positivist" Avenarius, and in the second, in the words of the subjective idealist Fichte.[48] The sophistry of this theory is so manifest that one feels uneasy in analysing it. Now then, if we "project" ourselves, our presence will be imaginary,—but yet the existence of the earth prior to the emergence of man is real. To be sure, a man could not be an actual observer of the earth which was in a molten state, and to "imagine" his being present there is obscurantism. It is the same as if I were to prove the existence of hell by the argument, that I could "project" myself there as an observer. The "reconciliation" of empirio-criticism with natural science may be reduced to this: Avenarius agrees to "project" something, the possibility of which is excluded by natural science. No man who has the least education, and is healthy, can doubt that the earth existed when there could be no life, no sensation or "central term." Hence, the whole theory of Mach and Avenarius, from which it follows that the earth is a complex of sensations ("bodies are complexes of sensations") or "complexes of elements in which the mental and physical are similar," or "the counter part of the system in which the central term cannot be equal to zero," is philosophic obscurantism, a reduction of subjective idealism to absurdity.

Petzoldt, having seen the absurdity of the position into which Avenarius fell, felt ashamed. In his *Einführung in die Philosophie der reinen Erfahrung* (Vol. II) he devotes a whole paragraph

[48] J. G. Fichte: *Recension des Aenesidemus, Sämtliche Werke*, 1794, Vol. I, p. 19.

(§ 65) to the problem of the reality of periods of the earth antedating the existence of man.

"In the teaching of Avenarius," says Petzoldt, "the self plays a rôle different from that in Schuppe [note that Petzoldt had openly and repeatedly declared: 'Our philosophy is founded on three persons—Avenarius, Mach, and Schuppe'] yet it is a rôle of determining importance for his theory." Petzoldt was evidently influenced by the fact that Schuppe had unmasked Avenarius by saying that everything was grounded on the self; and Petzoldt wishes to correct himself. "Avenarius once said," Petzoldt continues, "that we can think of a place where no human foot as yet has trodden, but in order to *think* about it, it is necessary that that be present which we designate by the term 'self' *whose* thought it becomes." [49]

Petzoldt replies: "The epistemologically important question consists in, not whether we could think of such a place, but whether we have a right to think of it as existing, or having existed, independently of any individual reflection."

That is right! People can think and "project" all kinds of hells and devils—Lunacharsky even "projected" (to use a mild expression) a religious conception—but the purpose of the theory of knowledge is to show the unreal, fantastic and reactionary character of such figments of the imagination.

". . . That the system C [brain] is necessary for reflection, is obvious for both the philosophy of Avenarius and that which is defended by me. . . ."

It is not true; Avenarius' theory of 1876 is a theory of mind without brain. And in the theory of 1892-4, as we shall see immediately, there is an element of idealist absurdity.

". . . But is this system C made the *condition of existence* of, say, the Secondary period of the earth?" And Petzoldt, presenting the argument of Avenarius already cited, on the aim of science and on the possibility of "projecting" the spectator replies: "No, we wish to know whether we have a right to imagine the existence of the earth at that remote epoch in the same way as I would imagine it having existed yesterday or a while ago. Or must the existence of the earth be really conditioned (as Willy claimed) by our right to assume that at a certain time together with the earth there existed at least some system C, be it even on the lowest

[49] *Vierteljahrsschrift für wissenschaftliche Philosophie*, Vol. XVIII, 1894, p. 146.

stage of its development?" (About this idea of Willy we shall speak presently.)

"Avenarius evades Willy's queer inference by means of the argument that the person who put the question could not divorce himself from his thought (that is, imagine himself absent) otherwise he could not avoid projecting himself imaginatively into the situation.[50] But then Avenarius makes the individual self of the person, who makes queries about such a self, the condition, not of a mere act of thought about the inhabitable earth, but of our right to think about the existence of the earth at that time.

"It would be easy to avoid these misleading paths, if we would not ascribe such importance to the self. The only thing the theory of knowledge demands, taking into consideration the various conceptions of the remote in both space and time, is that it be plausible and uniquely determined; the rest is the affair of special sciences" (Vol. II, p. 325).

Petzoldt converted the principle of causality into that of unique determination and introduced into his theory, as we shall see below, the *apriority* of such principle. This means that Petzoldt saves himself from Avenarius' subjective idealism and solipsism (in the professorial jargon, he attributes an exaggerated importance to the self) with the help of the *Kantian* ideas. The absence of the objective element in the doctrine of Avenarius, the impossibility of reconciling it with the demands of natural science which declares the earth (object) to have existed long before the appearance of living beings (subject), compelled Petzoldt to resort to causality (unique determination). The earth existed, says Petzoldt, for its existence prior to the appearance of man is causally bound up with the present existence of the earth. But in the first place, where does the notion of causality come from? *A priori*, says Petzoldt. In the second place are not those conceptions of hell, devils and Lunacharsky's "projections" also bound by causality? In the third place, the theory "of the complexes of sensation" at any rate proves itself to be destroyed by Petzoldt. Petzoldt could not do away with the contradiction which he found in Avenarius, and entangled himself even more, for there could be only one solution—the recognition of the theory that the outer world reflected by us exists independently of our mind. Only such a materialist solution is really compatible with natural science, and only such a

[50] *Der menschliche Weltbegriff*, p. 130.

conception eliminates the idealist solution of the principle of causality of Petzoldt and Mach, about which we shall speak separately.

The third empirio-criticist, R. Willy, for the first time in 1896 took up the question of this difficulty in Avenarius' philosophy, in an article entitled "*Der Empiriokriticismus als einzig wissenschaftlicher Standpunkt.*" What about the existence of the world prior to man? asks Willy; [51] and answers after Avenarius, "We project ourselves into the past." But then he goes on to say that by experience one must not understand the experience of man only. "We must regard as our primitive fellow-men, the entire realm of living beings—be it the most insignificant worm—since we consider the life of those beings in connection with experience at large" (pp. 73-4). The earth then, prior to the appearance of man, was the "experience" of a worm which functioned as the "central term," in order to save the "co-ordination" of Avenarius and his philosophy! No wonder that Petzoldt tried to shield himself against an argument that is not only the height of absurdity (an idea of the earth is here attributed to the worm, as if it at all corresponded with the theories of the geologists!), but which is not even of substantial help to our philosopher, for the earth existed not only prior to the descent of man but prior to any living being in general!

Willy again argued the problem in 1905; there was no mention of the worm this time.[52] Nor did Petzoldt's "principle of unique determination" satisfy Willy, who saw in it only a "logical formalism." The problem of the existence of a world prior to man, says the author, in his own Petzoldtian way, leads us "again to the things-in-themselves of common sense" (that is, to materialism—what a terrible thing, indeed!). What is meant by millions of years without life? "Is not time a thing-in-itself?" Of course, not! (More about this later on in our discussion of the Machians.) And that means that objects outside of men are only impressions, bits of phantasy spun out of their heads with the help of a few fragments which men find about them. And why not? Must a philosopher fear the stream of life? I say to myself, "Drop this philosophising about systems, utilise the moment, that moment which you experience and which alone brings happiness" (p. 178).

Here it is! Either materialism or solipsism! Despite the high-

[51] *Vierteljahrsschrift für wissenschaftliche Philosophie,* Vol. XX, 1896, p. 72.
[52] R. Willy: *Gegen die Schulweisheit,* pp. 173-8.

sounding phrases, this is the position Willy reaches in analysing the question of the existence of nature before the emergence of man.

To summarise: We have beheld three empirio-critical prophets who with the sweat of their brows laboured to reconcile their philosophy with the natural sciences, to mend the broken parts of solipsism. Avenarius repeated Fichte's argument and changed the real world into an imaginary one. Petzoldt left Fichtean idealism and came closer to Kantian idealism. Willy, having failed with the "worm," was ready to give up the question and against his own will blabbed out the truth: "Either materialism or solipsism, or the recognition of nothing else but the present moment."

Now we must show the reader how this problem was understood and treated by the Machians of our own country. Here is Bazarov in his *Outlines "of" Marxian Philosophy* (p. 11):

"It remains for us now, under the guidance of our true *vade mecum* [Plekhanov is meant here], to descend into the last and the most horrible sphere of the solipsist hell, into that sphere where, as Plekhanov assures us, each kind of subjective idealism is threatened by the necessity of representing the world in the forms beheld by contemplative ichthyosauruses and archæpteryxes. 'Let us mentally project ourselves,' writes Plekhanov, 'into the Secondary epoch when there existed on the earth only the remote ancestors of men. The question as to what was the status of space, time and causality then arises. Whose subjective forms were they at that time? Were they the subjective forms of the ichthyosauruses? And whose mind framed the laws of nature? The mind of the archæpteryx? To these queries the Kantian philosophy can give no answer. And it must be rejected as incompatible with modern science.' " [53]

Here Bazarov breaks the quotation from Plekhanov before a very important passage, namely: "Idealism says that without subject there is no object. The history of the earth shows that the object existed long before the subject came into existence, long before the appearance of organisms which possessed a perceptible grade of consciousness. . . . The history of evolution manifests the truth of materialism."

Now we are continuing the quotation from Bazarov: " . . . But does Plekhanov's thing-in-itself offer any solution? Remember that according to Plekhanov, too, we can have no notion as to the essence of things; we know only their phenomena, the results of

[53] *Ludwig Feuerbach*, p. 117.

their actions on our sense-organs. Besides this action they cannot be represented.[54] What sense-organs existed during the epoch of the ichthyosauruses? Evidently, only the sense-organs of the ichthyosauruses and their like. Only the conceptions of the ichthyosauruses were actual, the real manifestations of things-in-themselves. Hence also, according to Plekhanov, the paleontologist, if he desires to remain on 'real' ground, must write the history of the Secondary epoch in the light of the ichthyosaurus' contemplations. And consequently, in this respect we can make no more headway than could solipsism."

Such is the complete argument (the reader must pardon the lengthy quotation—we could not help it) of a Machian, an argument which is a first-class model of confusion.

Bazarov imagines that Plekhanov gave himself away. If the thing-in-itself, besides its action on our sense-organ, has no aspect of its own, it means that in the Secondary epoch it did not exist except as the "aspect" of the ichthyosaurus' sense-organ. And this is the argument of a materialist. If an "aspect" is the result of the action of the thing-in-itself of the sense-organs, does it therefore mean that things do not exist independently of any organs?

Let us imagine, however, that Bazarov was unable to grasp Plekhanov's words (improbable as such assumption is), that they appeared obscure to him. Even then are we justified in asking whether Bazarov is showing off his tricks against Plekhanov (whom the Machians honor as the only representative of materialism), or whether he is trying to clear up the problem as regards materialism? If Plekhanov seemed obscure or contradictory, why did not Bazarov take other materialists? Is it because he did not know others? But ignorance is no argument.

If Bazarov does not know that the fundamental principle of materialism is the recognition of the external world, and the existence of things outside our mind and independent of it, then we have before us a case of extreme ignorance. We shall have to remind the reader of Berkeley, who in 1710 criticised the materialists for their recognition of "objects in themselves," existing independently of our mind and yet which are reflected by our mind. Of course everyone has a right to side against materialism with Berkeley or anyone else, but no one has a right to speak about the ma-

[54] *Ludwig Feuerbach*, p. 112.

terialists and distort or ignore the fundamental principles of their teaching. To do so is to commit an inexcusable blunder.

Is Plekhanov right when he says that for idealism there is no object without a subject; that for materialism the object exists independently of the subject, and that an object reflects itself more or less correctly in the perceiver's mind? If he is wrong then, as a man who claims to respect Marxism, Bazarov should have pointed out Plekhanov's mistake, and then ignored him in the problem of materialism and the state of nature before the appearance of man; he should have taken Marx, Engels, Feuerbach into account. But if Plekhanov happens to be right about the question, or if Bazarov is unable to find out his error, then the latter's attempt to confuse things in the reader's mind concerning the most elementary conception of materialism and its distinction from idealism, is a literary indecency. As for those Marxians who are interested in the question, we shall bring, as testimony, aside from the words uttered by Plekhanov, Feuerbach, who, as is known (perhaps, not to Bazarov?), was a materialist and whose influence on Marx and Engels led them from the idealism of Hegel to their materialist philosophy. In his rejoinder to R. Haym, Feuerbach wrote: "Nature, which is not an object for us or our mind, is for speculative philosophy or at least for idealism, the Kantian thing-in-itself [we shall speak in detail later on about the confusion of our Machians of the Kantian thing-in-itself and the materialist thing-in-itself], an abstraction without reality, but it is also this very same nature that causes idealism's bankruptcy. Natural science necessarily shows us, at least in its present state, that there was a time when conditions were not fit for the existence of man, when nature, the earth, was not yet the object of the human eye and mind, when, consequently, nature was absolutely devoid of any trace of a human being. Idealism may retort that this state of nature is a state of which you think. Certainly, but from this it does not follow that this very state of nature never existed. Socrates and Plato do not exist for me now, for now I can only think of them; yet it does not follow that Socrates and Plato did not exist in their time outside of my mind." [55]

This is how Feuerbach discussed materialism and idealism as

[55] Ludwig Feuerbach, *Sämmtliche Werke*, Stuttgart, 1903, Vol. VII, p. 510; or Karl Grün: *Feuerbach in seinem Briefwechsel und Nachlass, sowie in seiner Philosophischen Characterentwickelung*, Leipzig, 1874, pp. 423-435.

they bore on the question as to whether nature existed prior to the appearance of man. Avenarius' sophistry (in "projecting the observer") was refuted by Feuerbach though the latter did not know "recent positivism." He was fully aware, however, of the old idealist sophistry. But Bazarov said nothing new; he has merely repeated this idealist sophistry: "If I had been there [at a time before the existence of man] I would have seen the world so-and-so" (*Outlines*, p. 29). In other words, only if I make the admission (that man could be the observer of an epoch at which he did not exist),—one absurd and contradictory to natural science, can I make the ends of my philosophy meet.

From this, one may infer the extent of Bazarov's knowledge of the subject and his literary manners. He does not even mention the "difficulty" with which Avenarius, Petzoldt and Willy grappled; he made such a blunder, that the logical result of his treatment of the subject was that there is no difference between materialism and solipsism. This he offered for the reader's enlightenment! Idealism is here represented as "realism" and materialism is described as denying the existence of things outside of their effects on the sense-organs! Well, either Feuerbach did not know the elementary difference between materialism and idealism, or Bazarov *et al.* formulated the truisms of philosophy in an entirely novel way.

Or take Valentinov. Look at this philosopher, naturally enthusiastic about Bazarov. (1) "Berkeley is the father of the correlative theory concerning the experience of the subject and object" (p. 148). But this is not Berkeley's idealism at all! This is a "projected analysis." (2) "The fundamental principles are formulated by Avenarius in the most realistic way outside of the forms [!] of its usual idealist interpretation" (p. 148). The mystification, evidently, ensnares the infants! (3) "Avenarius' conceptions of the starting point of knowledge is that each individual finds himself in a certain environment, otherwise the individual and the environment are given as connected and undivided [!] terms of one and the same co-ordination" (p. 148). Excellent! This is not idealism, oh, no! for Valentinov and Bazarov rose above materialism and idealism; this "inseparability" of object and subject is the most "realistic conception." (4) "Is the reverse assertion correct, that there is no counterpart of the term to which there would be no corresponding central term—the individual? Certainly not [!].

. . . In the Archaic epoch, the woods were green . . . yet there was no man" (p. 148). That means that it is possible to separate the "inseparable"! Is it not "clear enough"? (5) "Yet from the standpoint of the theory of knowledge, the problem of the object in itself is absurd" (p. 148). What a question! When there were no perceiving organisms, the objects were nevertheless "complexes of elements," identical with sensations! (6) "The immanence school in the persons of Schubert-Soldern and Schuppe presented these thoughts [!] in an unsatisfactory form and fell into the solipsistic impasse" (p. 149). In "these thoughts" there is no solipsism, and empirio-criticism did not, of course, repeat the reactionary theories of the immanentist school, who lie when they declare themselves to be in accord with Avenarius!

This, gentlemen of the Machian school, is not philosophy; it is a jumble of words!

5. *Does Man Think With the Help of the Brain?*

Bazarov emphatically answers this question in the affirmative. He writes: "If to Plekhanov's thesis 'that mind is an inner [Bazarov?] state of matter,' a more satisfactory qualification be added, namely, 'that each mental process is a function of the cerebral process,' then neither Mach nor Avenarius would object to it" (*Outlines*, p. 29).

For a mouse there is no stronger beast than a cat. For the Russian Machians there is no stronger materialist than Plekhanov. Was Plekhanov really the only one, or the first one, to defend the materialist thesis that mind is the inner function of matter? And if Bazarov did not like Plekhanov's formulation of materialism, why did he take cognizance of Plekhanov and not of Engels or Feuerbach? Simply because the Machians are afraid to admit the truth. They are fighting materialism, yet they pretend that they are only fighting Plekhanov. This is an unprincipled and cowardly stratagem.

Let us proceed, however, with empirio-criticism. Avenarius "would not dispute" the statement that "thought is a function of the brain," says Bazarov. These words are absolutely untrue. Avenarius not only objects to the materialist thesis, but he even invents a whole "theory" in order to refute this thesis. "Our brain," says Avenarius in *Der menschliche Weltbegriff*, "is not the locus or

residue, or creator of thought; it is not its instrument, or organ, or carrier or substratum" (p. 76,—sympathetically quoted by Mach in the *Analysis of Sensations,* p. 28). "Thought is not an indweller, or master, or half, or an aspect of anything; neither is it the product or even the physiological function or state of the brain in general" (*ibid*). And no less emphatically does Avenarius express himself in his *Bemerkungen*: "Presentations are not functions (physiological, or mental, or psycho-physical) of the brain" (*op. cit.,* p. 419). Sensations are not "psychical functions of the brain" (§ 116).

According to Avenarius, then, the brain is not the organ of thought, and thought is not the function of the brain. Take Engels and you will immediately meet with views exactly contrary to those —views that are frankly materialistic. "Consciousness and thought," says Engels in *Anti-Dühring,* "are products of the brain of man" (p. 56, English edition). This idea is often repeated in that work. In *Ludwig Feuerbach* we have the following exposition of Feuerbach's and Engels' views: ". . . The material, perceptual universe, to which we ourselves belong, is the only reality, and . . . our consciousness and thought, however supernatural they may seem, are only evidences of a material bodily organ, the brain. Matter is not a product of mind, but mind itself is only the highest product of matter. This is, of course, pure materialism" (p. 64). (*Cf.* p. 53) on the reflection of nature processes in the "thinking brain."

Avenarius rejects this materialist viewpoint saying that "the thinking brain" is a "fetish of natural science" (*Der menschliche Weltbegriff,* p. 70). Hence, Avenarius has no illusions concerning his absolute disagreement with natural science. He admits, as Mach and all the adherents of the immanentist school do, that natural science unconsciously upholds the materialist view. He admits and openly declares that he absolutely disagrees with the "prevailing psychology" (*Bemerkungen,* p. 150). The prevailing psychology is guilty of an inadmissible "introjection"—a new term invented by our philosopher, which means the inherence of thought in the brain, or of sensations in us. These two words (*in uns*), says Avenarius, express the fundamental proposition which empiriocriticism disputes. "This locating of the visible, etc., in man is what we call introjection" (p. 153, § 45).

This introjection rejects "on principle" the "natural conception of reality," substituting the expression "in me" instead of the

expression "before me" (*vor mir*, p. 154), making "of one component part of the (real) environment an integral part of the (ideal) mind" (*ibid*). "Out of the *amechanical* [a new word in place of 'mental'] which manifests itself freely and clearly in experience, introjection makes something which hides itself mysteriously in the central nervous system" (*ibid*).

Here we have the same mystification which we encountered in the famous defence of "naïve realism" by the empirio-criticists and the adherents of the immanentist school. Avenarius is acting here on the advice of Turgeniev's rascal, to denounce mainly those vices which one recognises in himself. Avenarius pretends that he is combating idealism: See how ordinary philosophic idealism is inferred from introjection, how, he says, the outer world is converted into sensation, into representation and so forth, while I defend "naïve realism," and recognise everything experienced as equally real, both "self" and environment, without locating the outer world in the brain of man.

The sophistry here is the same as that which we observed in the case of his celebrated co-ordination. Distracting the reader's attention by his attacks on realism, Avenarius defends this same idealism, albeit with a somewhat changed phraseology: thought is not a function of the brain; the brain is not the organ of thought; sensations are not functions of the nervous system! oh, no, sensations are "elements," psychical in one connection and physical in another—(though the elements are "identical"). Through the use of an ambiguous and pretentious terminology, ostensibly expressing a new "theory," Avenarius circled about for a while but ultimately gravitated to his fundamental idealist position.

And if our Russian Machians (Bogdanov and the others) have not noticed the "mystification" and have seen a refutation of idealism in what is really a "new" defence of it, then let us recall at least that in the analysis of empirio-criticism given by those who are experts in philosophy, we meet a sober estimation of Avenarius' trend of ideas, in which its real character is exposed once its pretentious terminology is eliminated.

Bogdanov wrote as follows in 1903 [56]:

"Richard Avenarius gave us a well drawn and most complete philosophic picture of the development of the dualistic conceptions

[56] "Authoritative Thinking," *The Psychology of Society* (a collective work, in Russian), p. 119 *ff*.

of mind and body. The gist of his 'doctrine of introjection' is that we observe directly only physical bodies, and are acquainted only by hypothetical inference with the experiences of others, that is to say, we know the mind of another person only through indirect reasoning. . . . The hypothesis is complicated by the assumption that the experiences of the other person occurring in his body, are lodged (are introjected) in his organism. Such an hypothesis is not only superfluous but gives rise in addition to numerous contradictions. Avenarius gave an account of these contradictions in a systematic fashion, thus revealing a series of successive historical stages in the development of dualism and of philosophical idealism; but here, we need not follow him. 'Introjection serves as an explanation of the dualism of mind and body.'"

Bogdanov, believing that the doctrine of "introjection" was aimed at idealism, was caught on the hook of the "professorial" philosophy. He accepted on faith the estimation of introjection given by Avenarius himself, and failed to notice the sting it contained for materialism. Introjection denies that thought is a function of the brain, that sensations are functions of the central nervous system of man; it denies therefore the simplest truths of physiology in order to defeat materialism. "Dualism" is here refuted idealistically (in spite of Avenarius' apparent ire against idealism), for sensation and thought prove to be not secondary phenomena, not derivative from matter, but primary entities. Dualism is refuted by Avenarius much in the same manner as the existence of the object without the subject is refuted. It is the same idealist "refutation" of the possibility of the existence of matter without thought, of the existence of an external world independent of our sensations; the absurd denial of the fact—that the visual image of the tree is a function of the retina, the nerves and the brain—was necessary for Avenarius in order to confirm his theory of the "inseparable" connection of both self and tree, subject and environment in an "all-inclusive" experience.

The doctrine of introjection is a confusion which necessarily gives rise to idealistic absurdities and contradicts the viewpoint of natural science which holds that thought is the function of the brain, that perceptions, that is, the images of the external world, are effects of external objects on our sense-organs. The materialist elimination of "the dualism of mind and body" (materialistic monism) consists in this, that the existence of the mind is shown

to be dependent upon that of the body, in that mind is declared to be secondary, a function of the brain, or a reflection of the outer world. The idealist elimination of the "dualism of body and mind" (idealistic monism) consists in an attempt to show that mind is not a function of the body, that mind is primary, that the "environment" and "self" exist in an inseparable connection in the same "complex of elements." Apart from these two diametrically opposed methods of elimination of "the dualism of body and mind," there can be no third method unless it be eclecticism,—an illogical confusion of materialism and idealism. And this confusion in Avenarius appears to Bogdanov and the rest "to be a truth which transcends both materialism and idealism."

Professional philosophers, however, are not as naïve and credulous as are the Russian Machians. True, each one of these expert gentlemen, generally full fledged professors, defends "his" own pet system of refutation against materialism or, at least, of "reconciliation" of materialism and idealism. But in discussing an opponent they reveal without any ceremony the incompatible elements of materialism and idealism in what is heralded as the "latest" and most "original" system. And although a few young intellectuals were enmeshed in Avenarius' net, the old bird, Wundt, however, was not enticed by such bait. Wundt, the idealist, very impolitely unmasked the buffoon Avenarius, giving him credit *en passant* for the antimaterialistic tendency of the doctrine of introjection.

"If empirio-criticism," Wundt wrote, "reproaches vulgar materialism because by means of such expressions as the brain 'has' a thought, or 'produces' reason, it expresses a relation which cannot be stated on grounds of actual observation [evidently Wundt accepts as a matter of course the assumption that a person thinks without the help of the brain!] . . . this reproach, of course, has good ground" (*loc. cit.* pp. 47-48).

Indeed, the idealists will always proceed against materialism hand in hand with the half-hearted compromisers, Avenarius and Mach! It is only to be regretted, Wundt goes on to say, that this theory of introjection "does not stand in any relation to the doctrine of the independent vital series, is only artificially tacked on to it" (p. 365).

"Introjection," says Ewald, "is no more than a fiction of empirio-criticism, which serves to shield its fallacies" (*loc. cit.* p. 44). "We here observe a peculiar contradiction. On the one hand the

elimination of the doctrine of introjection and the restoration of the natural conception of reality would restore it to life. On the other hand, by means of the notion of essential co-ordination, empirio-criticism leads to a purely idealistic theory concerning the absolute correlation of the counter term and the central term. Thus Avenarius' thought runs in a vicious circle. He started out to do battle against idealism but capitulated before it on the very eve of the first skirmish. He set out to liberate the realm of objects from the yoke of the subject, but ended in tying it again to the subject. What he actually destroys in his criticism, is only a caricature of idealism, and not the genuine expression of its theory of knowledge" (*loc. cit.* pp. 64-5).

"In the frequently quoted statement by Avenarius," Norman Smith says, "that the brain is not the seat, organ or supporter, of thought, he rejects the only terms which we possess for defining their connection" (*loc. cit.* p. 30).

No wonder then that the theory of introjection, approved by Wundt, gained the sympathy of James Ward, the outspoken spiritualist,[57] who waged a systematic war against "naturalism and agnosticism," and especially against Huxley (not because he was not outspoken and explicit in his materialism, which was Engels' reproach against him, but because under his agnosticism, materialism was concealed).

Let us note that Karl Pearson, the English Machian, without dodging the philosophic issues involved, and recognising neither introjection, co-ordination, nor "the discovery of the world-elements," arrives at the inevitable conclusion of Machism, namely, purely subjective idealism. Pearson knows of no "elements"; "sense-impressions" is his first and last word. He has no doubt that man thinks with the help of the brain. And the contradiction between this thesis (which alone is in conformity with science) and the starting point of his philosophy remained open and clear to all. Pearson tries hard to combat the view that matter exists independently of our sense-perceptions.[58]

Repeating all of Berkeley's arguments, Pearson declares that matter is a nonentity. But when he comes to speak of the relation of the mind to the brain, he is straightforward, as, for instance, in

[57] James Ward: *Naturalism and Agnosticism*, London, 1906, Vol. II, pp. 171, 172.

[58] Karl Pearson: *The Grammar of Science*, London, 1900, Ch. VII.

the following: "From will and consciousness associated with material machinery we can infer nothing whatever as to will and consciousness without that machinery" (*ibid.* p. 58). He lays down the following thesis as a summary of the corresponding part of his investigation: "Consciousness has no meaning beyond nervous systems akin to our own; it is illogical to assert that all matter is conscious [but it is logical to assert that matter contains a property of reflection which is in its essence akin to sensation], still more that consciousness or will can exist outside matter" (*ibid.* p. 75).

Pearson commits here a terrible blunder! Matter is nothing but groups of sense-perceptions. This is his thesis, his philosophy. This means that sensation or thought is primary; matter, secondary. But consciousness without matter cannot exist, surely, at least not without a nervous system. So that, mind and sensation now prove to be secondary. Water on the earth, the earth on the whale, and the whale on the water. Mach's "elements," Avenarius' "co-ordination" and "introjection" do not in the least mitigate the difficulty; they only obscure matters with erudite chatter.

The specially invented terminology of Avenarius (about which a word or two will suffice) may be considered as an instance of such chatter. Among the numerous terms which he has coined will be found such words as "notal," "secural," "fidential," etc. Our Russian Machians omit a good deal of this professorial jargon, apparently ashamed of it, and but rarely throw into the reader's face even such terms as "existential," etc. And if naïve people do take these words for a special kind of bio-mechanics, the German philosophers, themselves lovers of such "wise" words, laugh at Avenarius. To say "notal" (*notus* means "known"), or to say that this or the other thing is known to me, is absolutely the same, says Wundt in the paragraph entitled "*Scholastischer Character der empiriokritischer System.*" Indeed, it is the purest and most obscure scholasticism. Willy, one of the most faithful disciples of Avenarius, had the courage to confess it. "Avenarius dreamt of bio-mechanics," says he, "but an understanding of the life of the brain can only be reached through actual discoveries, not through the way in which Avenarius attempted to do it. Avenarius' bio-mechanics is not grounded on any new observation; its characteristic feature is a purely arbitrary construction of concepts; and those constructions are such that they are not even of the nature

of hypotheses which open up new vistas. They are mere stereotyped speculations which obstruct the distant landscape from view as would a wall." [59]

The Russian Machians will soon appear in the guise of lovers of fashion who still bedeck themselves with a hat which has long since been discarded by the bourgeois philosophers of Europe.

6. *Concerning the Solipsism of Mach and Avenarius*

We have seen that the starting point and the fundamental postulate of the empirio-critical philosophy is subjective idealism. The world is my sensation; this fundamental postulate is obscured—the word "element" to the contrary notwithstanding—by the theories of "independent series," "co-ordination," and "introjection." The absurdity of this philosophy consists in that it leads to solipsism, to the recognition of the sole existence of a solitary philosophising individual. Still our Russian Machians assure the reader that the "accusation" against Mach "of idealism and even of solipsism" is itself "extreme subjectivism." So says Bogdanov in the introduction to the *Analysis of Sensations* (p. xi), and the rest of the Machians repeat it in many ways.

Having revealed the method by which Mach and Avenarius shield themselves from solipsism, we need add only one thing. The "extreme subjectivism" of the assertions made about Mach may be laid entirely at Bogdanov's door, for in philosophical literature, writers of various tendencies have long since discovered the chief sin of Machism in spite of all its covering. We shall confine ourselves to those opinions which reveal the "subjective" ignorance of our Machians. It is significant that nearly all professional philosophers sympathise with one brand or another of philosophical idealism. In their eyes, as distinct from the Marxians, idealism is no reproach at all; they merely put on record Mach's philosophically confused trend of thought, opposing his system of idealism with another, one that seems to them more consistent.

Ewald says in his book which treats of Avenarius' teaching: "The creator of empirio-criticism wittingly or unwittingly commits himself to solipsism" (*loc. cit.*, pp. 61-62).

[59] R. Willy: *Gegen die Schulweisheit*, p. 169. Of course the pedantic Petzoldt will not make such admissions. He with the self-satisfaction of a philistine still chews on the cud of Avenarius' "Biological" scholasticism (Vol. I, Ch. II).

Hans Kleinpeter, a disciple of Mach, who emphasises his solidarity with him in the preface to *Erkenntnis und Irrtum*, says: "Mach can be taken as an example of one who combines theoretico-epistemological idealism with the demands of natural science [for the eclectics everything can be 'combined']. The latter can very well be deduced from solipsism, without stopping there." [60]

Lucka, in analysing Mach's *Analysis of Sensations*, says: "Apart from sundry misunderstandings, Mach stands on the basis of pure idealism. It is inconceivable how Mach can deny that he is a Berkeleian (*Kantstudien*, 1903, Vol. III, pp. 416-17).

W. Jerusalem, one of the most reactionary of Kantians, with whom Mach expresses agreement in that same preface ("a closer kinship of thought" had existed between them, Mach confesses [p. x], than he had suspected before he wrote *Erkenntnis und Irrtum*, 1906), says: "Consistent phenomenalism leads to solipsism" (and therefore we have to borrow something from Kant!).[61]

Hönigswald says that "the alternative for both the immanentists and the empirio-criticists is either solipsism or metaphysics of the type represented by Fichte, Schelling, or Hegel." [62]

The English physicist Oliver Lodge in his book denouncing the materialist Haeckel, drops a remark, in passing, about "solipsists like Pearson and Mach" as if their solipsism were a well-established fact.[63]

Nature, the organ of English natural science, pronounced, through the lips of the geometrician Dixon, a very definite sentence on Pearson, the follower of Mach. It is worth quoting, not for its novelty but for the reason that the Russian Machians have naïvely accepted the philosophical blunder of Mach as "*the* philosophy of natural science": [64]

"The foundation of the whole book is the proposition that since we cannot directly apprehend anything but sense-perceptions, therefore the things we commonly speak of as objective, or external to ourselves, and their variations, are nothing but groups of sense-impressions and sequences of such groups. But Professor Pearson admits the existence of other consciousness than his own, not only by implication in addressing his book to them, but explicitly in

[60] *Archiv für systematische Philosophie*, 1900, Vol. VI, p. 87.
[61] *Der Kritische Idealismus und die reine Logik*, 1905, p. 26.
[62] *Ueber die Lehre Humes von der Realität der Aussendinge*, 1904, p. 68.
[63] *Life and Matter*, 1907, p. 7.
[64] Bogdanov: Preface to *Analysis of Sensations*, p. xii *ff.*

many passages." Regarding the existence of another man's consciousness Pearson infers by analogy, observing the moving bodies of other people. Since consciousness of another man is real, then his existence outside of myself is inferred. "Of course it would be impossible thus to refute a consistent idealist, who maintained that not only external things but all other consciousness were unreal and existed only in his imagination; but to recognise the reality of other consciousnesses is to recognise the reality of the means by which we become aware of them, which, as Professor Pearson explicitly states, is the external aspect of men's bodies." The way out of the difficulty is to recognise the "hypothesis" that to our sense-impressions there corresponds an objective reality. This hypothesis satisfactorily explains our sense impressions. "Indeed," Dixon continues, "I cannot seriously doubt that Professor Pearson himself believes in them as much as anyone else. Only, if he were to acknowledge it explicitly, he would have to rewrite almost every page of the *Grammar of Science.*" [65]

Mockery!—that is the scientists' response to the idealist philosophy over which Mach waxed so enthusiastic.

And, finally, here is the opinion of the German physicist, Boltzmann. (The Machians will perhaps say, as Friedrich Adler did, that he is a physicist of the old school. But we are concerned here not with the theories of physics but with a fundamental philosophical problem.) Boltzmann wrote against those who "had become enthusiastic over the new epistemological dogmas":

"In general, distrust of the conceptions which we have derived from direct immediate sense-perception, has led to an extreme view which is the direct opposite of the previous naïve belief. Only sense perceptions are given us, it is said, and we have no right, therefore, to make a step beyond that. Yet if these people were consistent, they would have to ask themselves another question: Do we experience our perceptions of yesterday? Immediately we are 'given' only one perception or only one thought, namely, the one which is in our mind at the present moment. To be consistent one would have to deny not only the existence of other people, outside of one's self, but also the existence of all presentations of the past we have ever had." [66]

[65] *Nature*, July 21, 1892, pp. 268-69.

[66] Ludwig Boltzmann: *Populäre Schriften*, Leipzig, 1905, p. 132, *Cf.* pp. 168, 177, 187 *ff.*

This physicist rightly treats the so-called "recent" "phenomenalist" view of Mach and his companions as a revival of an old absurdity of subjective idealism.

Nay, those are stricken by "subjective" blindness, who have not "noticed" that solipsism is the fundamental error of Mach.

CHAPTER TWO

THE THEORY OF KNOWLEDGE OF EMPIRIO-CRITICISM AND OF DIALECTIC MATERIALISM II

1. *The "Thing-in-Itself," or V. Chernov Refutes Engels*

So extensively did our Machians deal with the "thing-in-itself" that were we to collect all their writings, we would have heaps of printed matter. The "thing-in-itself" is a veritable *bête noir* of Bogdanov, Valentinov, Bazarov, Chernov, Berman and Yushkevich. There is no abuse which the "thing-in-itself" is spared, no ridicule which is not showered upon it. And against whom do they wage war because of this luckless "thing-in-itself"? Here begins a division of philosophers of Russian Machism into political parties. All Machians, desirous to be Marxians, combat Plekhanov's "thing-in-itself," accusing him of straying and succumbing to Kantianism and forsaking Engels. (The first accusation we shall take up in the fourth chapter; the second accusation will be the topic of our present discourse.) Victor Chernov, a populist, and a sworn enemy of Marxism, in his defence of the "thing-in-itself" openly attacks Engels.

It is a shame to confess, yet it would be a sin to conceal, that this open enmity toward Marxism makes of Chernov a more principled literary opponent than are our comrades in politics and opponents in philosophy. For only a guilty conscience (plus inadequate knowledge of materialism?) could have been responsible for the fact that the Machians, who are desirous of being Marxians, backslided from Engels, ignored Feuerbach and idled away their time on Plekhanov. This cavilling at Engels' disciple is nothing but a trifling, boring, petty quarrel, and a cowardly manœuvre to avoid the direct treatment of the teacher's views. And as the task of these cursory remarks is to disclose the reactionary character of Machism and the correctness of the materialism of Marx and Engels, we shall not bother about the Machians (who wished to be Marxians), trifling with Plekhanov, but shall turn directly to Engels, who was refuted by the empirio-criticist, Mr. Chernov.

In his *Philosophical and Sociological Studies* (a collection of

articles written, with the exception of a few, before 1900) the article, "Marxism and Transcendental Philosophy" begins with an attempt to contrast Marx with Engels and levels accusations of "naïve-dogmatic materialism," of "the crudest materialist dogmatism" against the latter (pp. 29, 32). Mr. Chernov declares as a "sufficient" proof of his contention, Engels' discussion of the Kantian thing-in-itself and of the philosophic trend of Hume. We will begin with this discussion.

In his *Ludwig Feuerbach*, Engels declares the chief philosophic alignments to be materialism and idealism. Materialism regards nature as primary, and spirit as secondary; being is first, and thinking, second. Idealism holds the contrary view. This fundamental difference between the "two great camps," into which the philosophies of "various schools" of idealism and materialism are divided, Engels regards as the cornerstone of philosophy, accusing those who give another interpretation to idealism and materialism, of "confusion."

"The great fundamental question of all philosophies, especially of those which regard themselves as new, is connected with the relation between thought and existence, between spirit and nature." Having divided the philosophers into "two great camps," Engels shows that "the question of the relationship of thinking and being has another side. In what relation do our thoughts with regard to the world surrounding us stand to this world itself? Is our thought in a position to recognise the real world? Can we, in our ideas and notions of the real world, produce a correct reflection of the reality?" [1]

"This question is answered affirmatively by the great majority of philosophers," says Engels, including not only the materialists but even the most consistent idealists, as, *e. g.*, the absolute idealist Hegel who considered the real world to be the realisation of the "absolute idea" which has existed prior to the world and whose expression the human spirit could recognise in the real world.

"In addition there is still another class of philosophers, those who dispute the possibility of a perception of the universe or at

[1] *Ludwig Feuerbach*, p. 59; V. Chernov translates the word "*Spiegelbild*" literally *zerkalnoye otrazheniye* ("reflection in a mirror"), accusing Plekhanov of presenting the theory of Engels in a very weakened form; he supposedly is speaking in Russian of an *Abbild*, not of a *Spiegelbild*. This is the merest cavil. *Spiegelbild* ("reflection in a mirror") in German is also used in the sense of *Abbild* ("copy," "portrait").

least of an exhaustive perception. To them belong, among the moderns, Hume and Kant, and they have played a very distinguished rôle in the evolution of philosophy" (*ibid*, p. 60).

Mr. Chernov, citing these words of Engels, seems to be very anxious to engage in a controversy. To the word "Kant" he makes the following annotation: "In 1888 it was very strange to term such philosophers as Kant and especially Hume as 'modern.' At that time it was more natural to hear the mention of such names as H. Cohen, Lange, Riehl, Laas, Liebmann, Hering, etc. But 'modern' philosophy was evidently not a strong point of Engels" (*op. cit.*, p. 33, note 2).

Mr. Chernov is true to himself. In both economic and philosophical questions he reminds us of Voroshilov,[2] Turgeniev's hero, who annihilates the ignorant Kautsky and the ignorant Engels [3] by mere reference to "scholarly" names! The only trouble is that all these authorities mentioned by Chernov are the very Neo-Kantians of whom Engels speaks on the same page of his *Feuerbach* as theoretical reactionaries, who were endeavoring to revive the corpse of the long since refuted doctrines of Kant and Hume. The brave Chernov did not understand that Engels intended to refute by his argument those very same muddled but authoritative (for Machism) professors.

Having pointed out that it was Hegel who had already presented the "decisive" arguments against Hume and Kant, and that the "additions made by Feuerbach were more ingenious than deep," Engels continues:

"The most destructive refutation of this as of all other fixed philosophic ideas is actual result, namely, experiment and industry. If we can prove the correctness of our idea of an actual occurrence by experiencing it ourselves and producing it from its constituent elements, and using it for our own purposes into the bargain, the Kantian phrase *Ding an Sich* (thing-in-itself) ceases to have any meaning. The chemical substances which go to form the bodies of plants and animals remained just such a thing-in-itself until organic chemistry undertook to show them one after the other, whereupon the thing-in-itself became a thing-for-us, as the colouring

[2] A character in Turgeniev's novel *Smoke*. Voroshilov liked to display his erudition by mentioning the latest achievements of science, although he was completely ignorant of it.—*Ed.*

[3] V. Ilyin (N. Lenin), *The Agrarian Problem*, St. Petersburg, 1908, Part I, p. 195 (in Russian).

matter in the roots of madder, alizarine, which we no longer allow to grow in the roots of the madder in the field, but make much more cheaply and simply from coal tar" (*loc. cit.*, pp. 60-61).

Mr. Chernov, presenting this argument, loses patience and completely annihilates poor Engels. This is what he says: "No Neo-Kantian will be surprised that from coal tar we can make alizarine more cheaply and simply. But if together with alizarine it is possible to produce the refutation of the 'thing-in-itself' it would indeed prove to be a wonderful and unheard-of discovery—and not only for the Neo-Kantians alone. Engels, apparently, having learned that, according to Kant, the 'thing-in-itself,' was not knowable, directly converted the proposition and came to the conclusion that everything unknown was the thing-in-itself" (*loc. cit.*, p. 33).

Mr. Machian, there must be a limit to your lying! Before the eyes of the public you are distorting the very quotation of Engels which you are attempting to "tear to pieces" without even having grasped the question under discussion!

In the first place, it is not true that Engels "produces a refutation of the 'thing-in-itself.'" Engels said explicitly and clearly that he was refuting the Kantian "incomprehensible" (or unknowable) thing-in-itself. Mr. Chernov, therefore, confuses Engels' materialistic conception concerning the existence of things independent of our mind. In the second place, if the Kantian theorem reads that the thing-in-itself is unknowable, the "converse" proposition would read "the unknowable is the thing-in-itself." Mr. Chernov changed the *unknowable* into the *unknown*, without realizing that by such a substitution he had again blundered or lied about the materialistic views entertained by Engels!

So bewildered was Mr. Chernov by those reactionaries of the official philosophy whom he had taken as his guides, that he picked a quarrel with Engels, without having comprehended in the least what the meaning of the quotation was which he presented. Let us explain to the representative of Machism what all this means.

Engels states very definitely that he is answering both Hume and Kant, yet there is no mention at all in Hume about the "unknowable thing-in-itself." What is there then in common between these two philosophers? It is this. Both distinguish between "appearance" and that which appears, between perception and the perceived, between the "thing-for-us" and the "thing-in-itself." Hume does not want to hear about the "thing-in-itself." He regards the

very thought of it as illegitimate, considering it, as all later Humeans and Kantians do, as "metaphysics." Kant does recognise the existence of the "thing-in-itself" but declares it to be "unknowable," absolutely different from the phenomenon, belonging to quite a different plane of "other-sidedness," inaccessible to knowledge, yet revealed to faith.

What is the kernel of Engels' objections? Yesterday we did not know that coal tar contained alizarine; to-day we learned that it did. The question is, did coal tar contain alizarine yesterday? Of course it did. To doubt it is to make game of the science of to-day. And if it did, three important epistemological inferences follow from it:

(1) Things exist independently of our consciousness, independently of our sensations, for it is beyond doubt that alizarine existed in coal tar yesterday too; and it is also beyond doubt that yesterday we knew nothing at all about it and had no sensations of it.

(2) There is absolutely no difference between the phenomenon and the thing-in-itself, and there can be none. The difference is only between what is already known and what is not yet known. And the philosophic fiction which holds that a clear-cut distinction can be drawn between one and the other—that the thing-in-itself is on "the other side" of the phenomenon (Kant), is the veriest nonsense together with the notion that we must cut ourselves off by a philosophic partition from the question concerning those aspects of existence which are as yet unknown (in one part or another) but which nevertheless exist. (Hume.)

(3) In the theory of knowledge, as in other branches of science, we must think dialectically, that is, we must not regard our knowledge as ready made and unchangeable, but must determine how from ignorance knowledge is gradually built up, and how incomplete, inexact knowledge becomes more complete and more exact.

Once we accept this natural conception of how human knowledge gradually develops from ignorance, we shall find millions of instances of it at hand as simple as the discovery of alizarine in coal tar. By encountering millions of facts, not only in the history of science and technology, but in our everyday life, we become aware of how things-in-themselves are transformed into things-for-us, through the intermediation of those of our sense-organs which are subjected to bombardment by emanations from external objects.

We reach a full stop in this process of transformation when due to the presence of one obstacle or another, the action of the external object upon our sense-organs is discontinued and we witness the apparent disappearance of the "thing-in-itself." The sole and inevitable inference from all this, an inference which all of us draw in practical life and which lies at the basis of a "practical" theory of knowledge, is materialism. Its fundamental belief is that outside of us and independently of us, there exist objects, things, and bodies; that our perceptions are images of the outer world. The converse theorem of Mach (bodies are complexes of sensations) is nothing but sheer idealistic foolishness. Chernov manifested by his "analysis" of Engels his qualities of a Voroshilov; a simple instance from Engels seemed to him "queer and naïve!" He regards as genuine philosophy only the pretentiously erudite fiction, already examined by us, unable as he is to distinguish between the professorial eclectic theory of knowledge and the consistent materialistic one.

It is both impossible and unnecessary to analyse the other arguments of Chernov; they are merely expressions of elaborate foolishness (as, for example, the assertion, that for the materialists an atom is a thing-in-itself). We shall note only the argument which is relevant to our discussion—one in which some one was confused in regards to Marx's supposed difference from Engels. The question at issue is the *second* thesis of Marx's gloss on Feuerbach and Plekhanov's translation of the word *Diesseitigkeit*.

Here is the second thesis: "The question if objective truth is possible to human thought is not a theoretical, but a practical, question. In practice man must prove the truth, that is, the reality and force and the "this-sidedness" (*Diesseitigkeit*) of his thought. The dispute as to the reality or unreality of thought which is separated from practice is a purely scholastic question" (*Feuerbach*, p. 130).

In Plekhanov's translation instead of "to prove the this-sidedness of his thought" (a literal translation), there is written "to prove that thought does not stop at this side of phenomena." And Chernov thunders: "The contradiction between Marx and Engels is eliminated very simply. . . . Marx, like Engels, asserted the knowableness of things-in-themselves and the 'other-sidedness' of mind" (*loc. cit.*, note 34).

We have to deal here with a Voroshilov, who with each phrase involves us in infinite confusion! It is ignorance, Mr. Victor Cher-

nov,—simply ignorance,—not to know that all materialists stand for the knowableness of things-in-themselves. It is either ignorance, Mr. Victor Chernov, or positive indecency to jump over the very first phrase of the thesis, without realising that "objective truth" (*gegenständliche Wahrheit*) means nothing else than the existence of objects (things-in-themselves) which are truly reflected by the mind. It is illiteracy, Mr. Victor Chernov, to assert that from Plekhanov's exposition (Plekhanov gave an exposition, not a literal translation of the text) there results, as it were, a defense by Marx of the other-sidedness of thought. Only followers of Hume and Kant admit the validity of human understanding for "this side of phenomena." But for all materialists (including those of the seventeenth century, whom Bishop Berkeley combated—*see* Preface), "phenomena" are "things-for-us" or copies of the "objects-in-themselves." Of course, the free exposition of Plekhanov is not obligatory upon those who wish to know Marx himself, but it is obligatory to try to understand what it was that Marx actually meant, and not to show off one's skill in the manner of a Voroshilov.

It is interesting to note that while among those who call themselves socialists, there is an unwillingness or inability to carefully ponder over the "theses" of Marx, bourgeois writers, expert in philosophy, sometimes manifest more conscientiousness. I know of one such writer who carefully examined the philosophy of Feuerbach and, in connection with it, the theses of Marx. The writer is Albert Levy, who devoted the third chapter of the second part of his book on Feuerbach to an examination of the influence of Feuerbach on Marx.[4] Without going into the question of the correctness of Levy's interpretation of Feuerbach, or of his criticism of Marx offered from the ordinary bourgeois viewpoint, we shall only present his judgment on the philosophic content of the famous "theses" of Marx.[5] Regarding the first thesis Levy says: "Marx recognises

[4] Albert Levy: *La philosophie de Feuerbach et son influence sur la litterature allemande*, Paris, 1904, pp. 249-338; pp. 290-298.

[5] The eleven theses of Karl Marx are published in Engels' *Ludwig Feuerbach*. They were written in 1845-6, when, according to Engels, "our knowledge of economic history was incomplete. . . . These are notes hurriedly scribbled for later elaboration, not in the least degree prepared for the press, but invaluable as the first written form, in which is planted the genial germ of the new philosophy." (Author's Preface to *Ludwig Feuerbach*, p. 35.)

A photographic reproduction of the "Theses" in Marx's own handwriting and an editorial revision of the text as heretofore published is reprinted in *Marx-Engels Archiv*, Vol. I, pp. 222-230, published by the Marx-Engels Institute, Moscow, under the editorship of D. Riazanov.—*Ed.*

together with the preceding materialists and Feuerbach that to our conceptions of things there correspond real and distinct objects outside us. . . ."

As the reader sees, it is quite clear to Albert Levy that not only the basic position of Marxism but the basic position of every kind of materialism, of all "preceding materialism" is the recognition of real objects outside us, to which our conceptions "correspond." The truism, which holds good for all materialism in general, is unknown only to the Russian Machians. Levy continues:

"On the other hand, Marx expresses regret that materialism had left it to idealism to appreciate the importance of the active powers [*i. e.*, human practice]. These active powers, in Marx's opinion, must be wrested from the hands of idealism in order to integrate them into the materialist system; but it is understood that these powers must be given that real and sensible character, which idealism cannot grant them. Thus, Marx's idea is this: Just as to our conceptions there correspond real objects outside us, so to our phenomenal activity there corresponds a real activity outside us, an activity of things. In this sense humanity participates in the absolute, not only through theoretical cognition but also through practical activity; thus all human activity acquires a dignity and nobility which permits it to advance hand in hand with theory. Revolutionary activity henceforth acquires a metaphysical significance. . . ."

Albert Levy is a professor, and a well-behaved professor must inveigh against the materialists as "metaphysicians." For the idealist professors of the Humean and Kantian variety, every kind of materialism is "metaphysics," because it posits beyond appearance a reality independent of us. Levy is, therefore, essentially right when he says that in Marx's opinion to the "phenomenal activity" of humanity there corresponds "an activity of things," that human practice has not only a phenomenal (in the Humean and Kantian sense) but an objectively real significance. The criterion of practice—as we shall show in greater detail in § 6 of this chapter—has an absolutely different meaning for Mach and Marx. "Humanity partakes of the absolute" means that human thinking reflects absolute truth (see below, § 5); the practice of humanity, which verifies the truth of our conceptions, establishes that which corresponds to absolute truth in them. Levy continues:

"Having reached this point, Marx naturally runs up against the objection of the critics. He has admitted the existence of things-in-

themselves, in relation to which our theory appears to be their human translation. He cannot avoid the usual objection: What is your guarantee of the fidelity of the translation? What is the evidence that the human mind yields objective truth? Marx replies to this objection in his second thesis" (*loc. cit.*, p. 291). The reader sees that Levy does not doubt for a moment that Marx recognised the existence of things-in-themselves!

2. *On "Transcendence" or Bazarov "Corrects" Engels*

If the Russian Machians, who desire to be Marxians, evaded one of the most explicit and emphatic statements of Engels, they "corrected" another statement of his in the manner of Chernov. Tedious and difficult as is the task of correcting these perversions and mutilations in turn, yet he who wishes to speak of the Russian Machians cannot rid himself of it.

Here is Bazarov's mutilation of Engels. In the article, *Historical Materialism*, Engels writes the following about the English agnostics (philosophers of Hume's trend of thought): ". . . Our agnostic admits that all our knowledge is based upon the information imparted to us by our senses" (*loc. cit.*, p. 12).

Let us note for the benefit of our Machians that the agnostic also takes his point of departure from sensations and recognises no other source of knowledge. For the information of the adherents of "recent positivism," be it said that an agnostic is a pure "positivist."

"But, he [the agnostic] adds, how do we know that our senses give us correct representations of the objects which we perceive through them? And he proceeds to inform us that, whenever he speaks of objects or their qualities, he does in reality not mean these objects and qualities, of which he cannot know anything for certain, but merely the impressionus which they have produced on his senses. . ." (p. 12).

What two lines of philosophic thought does Engels contrast here? One line holds that perceptions give us correct impressions of things, that we directly know objects themselves, that the outer world acts on our sense-organs. This is materialism—a doctrine with which the agnostic does not agree. In what then does the essence of the agnostic's reasoning consist? In this, that he does not go further than perceptions, that he stops on this side of phenomena,

refusing to admit the "certainty" of our knowledge beyond the boundaries of sense-perception. About the things-in-themselves, we know nothing; this proposition which the materialists denied and which Berkeley supported, is also upheld by the agnostic. In short, this means that the materialist affirms both the existence and knowledge of things-in-themselves while the agnostic admits neither the thought concerning the existence of things-in-themselves, nor the possibility of knowing about them.

The question is, in what way does the position of the agnostic as presented by Engels, differ from that of Mach? In the "new" word "element"? But it is sheer childishness to believe that a "new" terminology can change a fundamental philosophic alignment, that sensations, when called "elements," cease to be sensations! Or does the difference lie in the "novel" conception that the very same elements in one relation constitute physical elements and in another, psychical elements? Does not the agnostic, as Engels represents him, also put "impressions" in place of "things-in-themselves"? That means that to all intents and purposes the agnostic, too, differentiates between physical and psychical "impressions"! Here, also, the difference is exclusively one of nomenclature; when Mach says that "objects are complexes of sensations," then he is a Berkeleian; when Mach "corrects" himself, and adds that "elements" (sensations) can be physical in one relation and mental in another, then he is an agnostic, a Humean. Mach does not forswear either of these two fundamental divisions in philosophy, and only the extremest naïveté can take this muddlehead at his word and believe that he actually "transcended" materialism and idealism.

Engels deliberately makes no mention of names in his exposition, criticising instead of single representatives, the whole Humean tradition (professional philosophers like to regard systems as original in which petty changes have been made in the terminology or argument of preceding systems), the fundamental philosophy of Hume. Engels criticises not the particular expression of the doctrine but its essential argument. He examines the principal differences which separate materialism from all followers of Hume, and his criticism therefore includes Mill, Huxley and Mach. It makes no difference whether we say with Mill that matter is the permanent possibility of sensations, or with Ernst Mach that matter is a more or less constant complex of "elements"—sensations; we remain within

the bounds of agnosticism or Humism. These two standpoints or rather these two formulations are both covered by Engels' exposition of agnosticism. The agnostic does not go beyond his sensations, and asserts that he cannot know anything for certain about their source, their origin, etc. And if Mach attributes such great significance to his disagreement with Mill in the minor details of this particular question, he lends additional point to Engels' apt characterisation of professors as *Flohknacker*. Yes, gentlemen, having introduced petty corrections and altered your terminology instead of openly abandoning your half-hearted position, you have but crushed a flea!

And how does Engels (at the beginning of the article Engels explicitly and emphatically contrasts his materialism with agnosticism) refute their arguments?

"Now, this line of reasoning seems undoubtedly hard to beat by mere argumentation. But before there was argumentation there was action. *Im Anfang war die Tat.*[6] And human action had solved the difficulty long before human ingenuity invented it. The proof of the pudding is in the eating. From the moment we turn these objects to our own use, according to the qualities we perceive in them, we put to an infallible test the correctness or otherwise of our sense-perceptions. If these perceptions have been wrong, then our estimate of the use to which an object can be turned must also be wrong, and our attempt must fail. But if we succeed in accomplishing our aim, if we find that the object does agree with our idea of it, and does answer the purpose we intended it for, then that is positive proof that our perceptions of it and of its qualities, *so far*, agree with reality outside ourselves" (*loc. cit.*, p. 12).

The materialist theory then, the theory of reflection of objects by our mind, is here presented with perfect clearness: things exist outside of us. Our perceptions and representations are their images. The verification of these images, the distinction of true and false images, is given by practice. But let us listen further, what Engels has to say about the matter (Bazarov ceases to cite Engels or Plekhanov, for he deems it unnecessary to settle accounts with Engels himself):

[6] Goethe, *Faust*, Part I. Goethe changes the Bible's saying, "In the beginning was the Word" (*St. John*, 1 i.) to "In the beginning was the Deed," which was in consonance with his dynamic philosophy.—*Ed.*

"And whenever we find ourselves face to face with a failure, then we are generally not long in making out the cause that made us fail; we find that the perception upon which we acted was either incomplete and superficial, or combined with the results of other perceptions in a way not warranted by them—what we call defective reasoning. So long as we take care to train and to use our senses properly, and to keep our action within the limits prescribed by perceptions properly made and properly used, so long we shall find that the result of our action proves the conformity of our perceptions with the objective nature of the things perceived. Not in one single instance, so far, have we been led to the conclusion that our sense-perceptions, scientifically controlled, induce in our minds ideas respecting the outer world that are, by their very nature, at variance with reality, or that there is an inherent incompatibility between the outer world and our sense-perceptions of it. But then come the Neo-Kantian agnostics and say:" (p. 12).

We shall leave for some other time the presentation of the arguments of the Neo-Kantians. Let us remark here that anyone who was in the least acquainted with the matter, or who had simply paid attention to what he read, could not have failed to understand that Engels was propounding here the same materialism with which the Machians always and everywhere do battle. Now witness the manner in which Bazarov misrepresented Engels:

"Engels," writes Bazarov of the quotation which was partly adduced by us, "really comes out here against the Kantian idealism. . . ." It is not true. Bazarov confuses matters. In the part which he quoted, and which we also quoted in full, there is not a syllable uttered against either Kantianism or idealism. If Bazarov had really read through the whole article by Engels, he would have seen that of Neo-Kantianism, and of Kant's whole line of thought, Engels speaks only in the sentence which we did not completely cite. And had Bazarov paid more attention to reading that part which he himself quotes, then he would have seen that in the arguments of the agnostic—refuted there by Engels—there was not a trace of either the idealistic or Kantian philosophy. Idealism begins only when the philosopher says that objects are my sensations; Kantianism begins when the philosopher says that the thing exists in itself, but is unknowable. Bazarov confuses Kantianism with Humism; and he confuses them because, being a half-Berkeleian, half-Humean

of the Machian sect, he does not comprehend—as will further be shown—the difference between the Humean opposition to Kantianism and the materialists' opposition to it.

"But, alas!" continues Bazarov, "Engels' argument is directed as much against Plekhanov's philosophy as it is against the Kantian one. In the school of Plekhanov—Orthodox, as Bogdanov has already remarked, there is a fatal misunderstanding about the nature of consciousness. To Plekhanov, as to all idealists, it seems that everything experienced, or cognised, is 'subjective,' that if experience is made the starting point it leads directly to solipsism since real existence can be found only beyond the boundaries immediately experienced . . ." (*loc. cit.*).

This is totally in the spirit of Chernov and his assurances that Liebknecht was a true Russian populist! If Plekhanov is an idealist who deviated from Engels, then why are not you, Bazarov, who supposedly are an adherent of Engels, a materialist? This is nothing but wretched mystification. By means of the Machian expression, "immediately experienced," you are beginning to confuse the difference between agnosticism, idealism and materialism. Don't you understand that such expressions as the "immediately experienced," or the "factually experienced," betray the confusion of both the Machians and the immanentists, that it is a masquerade, in which the agnostic (and sometimes, as in Mach's case, the idealist too) puts on the cloak of a materialist? For the materialist the outer world, the image of which is our sensation, is "factually given." For the idealist sensation is "factually given," while the outer world is declared to be a "complex of sensations." For the agnostic also sensation is the "immediately experienced," but the agnostic does not go on to either the materialist recognition of the outer world's reality, or to the idealist recognition of the world as my sensation. Therefore your statement, that "the real existence, according to Plekhanov, can be found only beyond the boundaries of the immediately experienced," is utterly fallacious, and follows only from your Machian position. Although you have a perfect right to adopt whatever position you choose, even including that of Mach, you have no right whatsoever to misrepresent Engels once you speak of him.

From Engels' own expression it is obvious that for the materialist the real existence lies beyond the "sense-perceptions," impressions and representations of man; for the agnostic it is impossible to go

beyond those perceptions. Having taken Mach, Avenarius and Schuppe at their word that what is "immediately" (or factually) experienced, "connects" the perceiving self with the perceived environment through the famous doctrine of "essential" co-ordination, Bazarov wishes to ascribe this fallacy to Engels!

" . . . The above quoted citation from Engels," Bazarov goes on to say, "looks as if it were specially written by him in a very popular and accessible form, in order to clarify this idealist misunderstanding. . . ."

Not in vain did Bazarov attend Avenarius' school! He continues his mystification, under the pretence of a struggle with idealism (of which Engels does not speak), in order to smuggle in the idealist notion of "co-ordination." Not so bad, Comrade Bazarov!

" . . . The agnostic asks, how do we know that our subjective perceptions give us a correct impression of objects?"

You muddle things, Comrade Bazarov! Engels himself certainly does not say it and does not even ascribe to his enemy, the agnostic, such an absurd expression as "subjective" perceptions. There are no other perceptions, besides human ones, for we have been speaking from the human point of view and not from the devil's point of view. You are again trying to make a Machian of Engels, trying to make it appear that the agnostic regards perceptions, or, to be more exact, sensations, as subjective (which the agnostic does not say!), and that we, together with Avenarius, have "co-ordinated" the object into an inseparable connection with the subject! Not so bad, Comrade Bazarov!

" . . . But what do you term 'correct'? asks Engels. The correct is that which is confirmed by our practice. Hence, inasmuch as our sense-perceptions are confirmed by experience, they are not 'subjective,' that is, they are not voluntary, or illusory, but correct and real as such. . . ."

You are confusing matters again, Comrade Bazarov! You have altered the question concerning the existence of things outside our sensations, perceptions, representations, for the question regarding the criterion of correctness of our representations of "these same" objects. You are obscuring the first question with considerations relevant to the second. But Engels says explicitly and clearly that what distinguishes him from the agnostic is not only the latter's uncertainty as to whether our representations are "correct," but rather the agnostic's doubt as to whether we may speak of the

objects themselves, as to whether we may have "certain" knowledge of their existence. Why did Bazarov resort to this illegitimate change? In order to obscure and confound the basic question of materialism (and of Engels' position as a materialist) as regards the existence of things outside our mind, which, by acting on our sense-organs, give rise to sensations. It is impossible to be a materialist without answering this question in the affirmative; but one can be a materialist and still differ on the question as to what constitutes the criterion of correctness of our sense-perceptions.

Bazarov confuses matters still more when he attributes to Engels the absurd and ignorant expression, in the dispute with the agnostic, that our sense-perceptions are confirmed by "experience." Engels did not use and could not have used this word, for he was well aware that the idealist Berkeley, the agnostic Hume and the materialist Diderot all had recourse to experience.

" . . . Between the limits in which we have to deal with objects in practical life, the representations of the object and its properties coincide with the reality existing outside of us. 'To coincide' is somewhat different than being merely an 'hieroglyphic.' To coincide means that, in the given limits, the sense-perception *is* the external existing reality . . ." (Bazarov: *loc. cit.*).

All's well that ends well. Engels has been prepared *à la* Mach, fried and served with a Machian dressing. Let the most respectable cook take care lest he himself choke over the dish!

"Sense-perception is the reality existing outside of us!" But this is just the fundamental fallacy which we have seen constitutes the blunder and falsity of Machism, and which was responsible for the remaining absurdities of that system, and which helps to explain why Mach and Avenarius have been embraced by the most rabid reactionaries and priests together with the followers of the immanentist school. No matter how circuitous Bazarov was in his approach, no matter how diplomatic he was in evading ticklish questions, he nevertheless gave himself away at the end, and displayed his Machian character! To say that "sense-perception is the existing reality outside of us," is to return to Hume or even to Berkeley whose modern protagonists have hidden themselves in the mist of "co-ordination." It is either the fraud of the idealist or the subterfuge of the agnostic, Comrade Bazarov, for sense-perception is not the reality existing outside of us, it is only the image of that reality. You are cavilling at the ambiguous connotation of the Russian word

sovpadat (coincide). Do you wish to compel the unsophisticated reader to believe that "to coincide" means "to be the same" and not "to correspond"? This is to misrepresent Engels *à la* Mach, by perverting the sense of the quotation.

Take the German original and you will find there the words *stimmen mit*, which mean to correspond, "to voice with"; the latter translation is literal, for *Stimme* means voice. The words "*stimmen mit*" cannot mean "to coincide" in the sense of being one and the same thing. And even for the reader who does not know the German language but who reads with the least bit of attention, it is perfectly clear that Engels, throughout his presentation, treats the expression "sense-perception" as the image (*Abbild*) of the reality existing outside of us. He will see that the word "coincide" ought to be used in Russian exclusively in the sense of "correspondence" or "concurrence." To attribute to Engels the thought that "sense-perception *is* the existing reality," is such a gem of misinterpretation and perversion, such a flagrant attempt to palm off agnosticism and idealism as materialism, that one must readily grant that Bazarov has broken the record!

How can sane people, who still have sound judgment and a reliable memory, utter the statement that "sense-perception [it matters not how qualified] is the reality existing outside of us"? The earth is a reality existing outside of us. It cannot "coincide" (in the sense of being the same) with our sense-perception, or exist in an inseparable co-ordination with it, or be at bottom a "complex of elements" identical with sensation in one of its aspects, for the earth existed at a time when there was no human being, no sense-organs, no matter organised in the complex form with which the property of sensation is associated.

It is clear that in order to cover up the idealist folly of such an assertion, the sham theories of "co-ordination," "introjection," and of the newly discovered "world elements," were invented. Bazarov's formulation, which escaped him so unexpectedly and inadvertently, is excellent in that it reveals just that monstrous absurdity, which otherwise it would have been necessary to unearth from heaps of pseudo-erudite detail.

You deserve commendation, Comrade Bazarov! We shall erect a monument to you during your lifetime. On one side of it we shall inscribe your pronunciamento, and on the other, "To the Russian Machian, who did Machism to death among the Russian Marxists"!

We shall speak separately of the two points which were touched upon by Bazarov in the above-mentioned citation—the difference between the criteria of practice for agnostics (Machians included) and for materialists, and the difference between the theory of reflection and the theory of symbols. Now we shall continue to quote from Bazarov a little further.

". . . And what is to be found beyond those boundaries? Of this Engels does not say a word. He does not manifest the desire anywhere to perform that 'transcendence,' that transcendental flight from the perceptually given world, which lies at the foundation of Plekhanov's theory of knowledge. . . ."

What does he mean by "those" boundaries? Does he mean the boundaries of the "co-ordination" of Mach and Avenarius which inseparably connects the ego and the environment, the subject and object? The very question which Bazarov puts is devoid of sense. Had he asked the question in an intelligible way, he would understand that the outer world lies "beyond the boundaries" of the sensations, perceptions and representations of men. But the word "transcendence" betrays Bazarov more and more. It is a specific Kantian and Humean "stratagem" to erect an absolute boundary between the phenomenon and the thing-in-itself. To go beyond the phenomenon to the object existing outside of perception, or, if you will, to transcend the limits of our sensation, etc., is an instance of "transcendence," says Kant; and this "transcendence" (or transcendental flight), let us admit, is not a matter for knowledge but of faith. Hume contends that such transcendence is completely inadmissible. And the Kantians, like the Humeans, call the materialists transcendental realists, "metaphysicians," for illegitimately transcending the limits of the given region of experience in order to get at one absolutely different from it. In the works of the contemporary professors of philosophy, who follow in the path of the Kantian and Humean reactionary philosophy, you will encounter (to take at least the names enumerated by Voroshilov-Chernov) innumerable repetitions of accusations against the materialists for being "metaphysicians" and "transcendentalists." Bazarov adopts both the word and the thought from the reactionary professors and boastfully parades this piece of profound criticism in the name of "recent positivism"! As a matter of fact the very idea of "transcendentalism," that is the absolute separation between appearance and the thing-in-itself, is a fallacious idea given currency by the

agnostics (Humeans and Kantians included) and idealists themselves. We have already explained it in the example taken from Engels about alizarine, and we will shortly elaborate upon the words of Feuerbach and Joseph Dietzgen. But let us first get through with Bazarov's misrepresentation of Engels:

" . . . In one place in his *Anti-Dühring*, Engels says that the existence of anything outside of the realm of sense-perception is an *offene Frage*, for whose answer we have no data."

Bazarov repeats this argument after the German Machian, Friedrich Adler. This last example is perhaps even worse than the celebrated identification of "sense-perception" with "external reality." In his *Anti-Dühring* Engels says:

"The unity of the universe does not lie in the bare fact of its existence, although its existence is a presumption of its unity, since it must first exist before it can be a unit. Existence beyond the bounds of our horizon is an open question (*offene Frage*). The real unity of the universe lies in its materiality, and this is established, not by a couple of juggling phrases but by means of a long and difficult development of philosophy and natural science." [7]

Look at the new dish which our cook has prepared for us. Engels is speaking here of the possibility of something existing beyond the bounds of our horizon, the existence of men on Mars, for instance. It is clear that such existence is indeed an open question. And Bazarov, not presenting the full quotation, apparently with malice and aforethought, interprets Engels as if the *offene Frage* relates to the question of "bare existence beyond the perceptual world." This is the height of absurdity, for Engels is here being taxed with the views of those professors of philosophy whom Bazarov accepts without any questioning and whom Dietzgen justly called the "graduated flunkeys" of the priesthood or fideism. Indeed, fideism does assert that there exists something "beyond the world of perception." The materialists in agreement with natural science decidedly oppose such assertion. The position which mediates between the two is held by those professors, followers of Kant, Hume or Mach, "who have found the truth outside the poles of both materialism and idealism" and who "make peace," for this in an "open question." Had Engels said anything similar to this, it would be positively disgraceful to call oneself a Marxist.

But enough! The half page of quotation from Bazarov is so full

[7] *Landmarks of Scientific Socialism*, p. 66.

of blunders that we are compelled to limit ourselves to what has already been said about it, without following further the aberrations of the Machian point of view.

3. *Feuerbach and Dietzgen on the "Thing-in-Itself"*

To reveal the absurdity of the assertions made by the Machians to the effect that the materialists, Marx and Engels, denied the existence of the "thing-in-itself" and the possibility of its cognition, or that they admitted the existence of an absolute line of division between the phenomenon and the thing-in-itself, we shall adduce a few quotations from Feuerbach. The trouble with our Machians arose from the fact that they began to parrot the words of the reactionary philosophers on dialectic materialism without either acquainting themselves with dialectics or with materialism.

"Modern philosophical spiritualism," says Feuerbach, "which calls itself idealism reproaches materialism with the following destructive (in its own eyes) stricture: Materialism is dogmatism; it starts from the world of perception as if from an undisputed, objective truth, and considers it as a world-in-itself existing outside of us, while in reality the world is only a product of the spirit." [8]

This seems sufficiently clear. The world-in-itself is a world that exists outside of us. The materialism of Feuerbach, as well as the materialism of the seventeenth century, which was attacked by Bishop Berkeley, consisted in the recognition of the existence of objects-in-themselves external to the human mind. The *an sich* (in itself) of Feuerbach is absolutely opposed to the *an sich* of Kant. (Let us recall the excerpt from Feuerbach, where he says that for Kant the *Ding an sich* is an "abstraction without reality.") For Feuerbach the *Ding an sich* is an abstraction of a reality, that is, of an external intelligible world, which does not differ from the world of "phenomena."

Feuerbach shows very ingeniously and clearly how ridiculous it is to postulate a "transcendence" between the world of phenomena and the world-in-itself, an abyss created by the priests and adopted by the professors of philosophy. Here is one of his analyses:

"Of course the products of phantasy, too, are the products of nature, for the power of phantasy, like other human powers, is in the last analysis, both in its basis and in its origin a force of

[8] *Sämmtliche Werke,* 1866, Vol. X, p. 185.

nature. Nevertheless a human being is a creature who is distinguished from the sun, moon and stars, from stones, animals and vegetables, in a word, from those creatures (*Wesen*) which he designates by one general name, 'nature.' Consequently, his images or perceptions of the sun, moon and stars and other creatures of nature (*Naturwesen*), although products of nature, are yet distinct from those objects in nature of which they are the perceptions." [9]

The objects of our presentations are distinguished from our presentations themselves; the thing-in-itself is distinguished from the thing for us, for the latter is only a part, or only one aspect, of the former, just as man himself is only a fragment of nature which reflects itself in his presentations.

" . . . My taste-nerve is just as much a product of nature as salt is, but from this it does not follow that the taste of salt, as such, would be its independently existing objective property, that the salt which appears only as an object of sensation would be such in itself, or that the sensation of salt on the tongue would be the property of salt when we only think of it without tasting it. . . ." And several pages previous: "A saline taste is the subjective expression of an objective property of salt" (*ibid.*, p. 514).

Sensation is the result of the action of an objectively existing thing-in-itself upon our sense-organs. Such is the theory of Feuerbach. Sensation is a subjective image of an objective world, a world *an und für sich.*

" . . . Although man is a creature of nature (*Naturwesen*), like the sun, stars, vegetables, animals, and rocks, nevertheless he is distinguished from nature. Nature in the head and heart of man is distinguished from nature outside of the human head and heart. . . . The human body is the only object in which, according to the admission of the idealists themselves, the fact of the 'identity between object and subject' is realised; for the human body is that object whose equality and unity with my own inner being stands beyond any possible doubt. . . . But is not one man for the other, even the most intimate, an object of phantasy, an object of representation? Does not each man comprehend the other in his own way, in his own sense [*in und nach seinem Sinne*]? . . . And if between man and man, and between mind and mind, there is a difference which it is impossible to ignore, how much greater must

[9] *Werke*, Stuttgart, 1903, Vol. VIII, p. 516.

the difference be between an unthinking, unhuman, dissimilar (to us) being in itself [*Wesen an sich*] and the same being as we think of it, perceive it and apprehend it?" (*ibid.*, p. 518).

Every mysterious, subtle and insidious difference between the appearance and the thing-in-itself is an absolute philosophic fallacy. In fact each one of us has observed innumerable times the simple and palpable transformation of the "thing-in-itself" into the "thing-for-us." This transformation is cognition. The "teaching" of Machism that since we know only sensations, we cannot know of the existence of something beyond sensations, is an old sophism of the idealist and agnostic philosophy presented in a new dressing.

Joseph Dietzgen is a dialectical materialist. We shall show below that his method of expression is often inexact, that often it is not devoid of confusion, a fact which is seized upon by various unwise people (Eugene Dietzgen amongst them) and, of course, by our Machians; yet either they were unable or unwilling to determine the dominant trend of his thought, and to disengage clearly his basic materialism from the elements foreign to it.

"If we wish," says Dietzgen, "to regard the world in the light of the thing-in-itself, we shall easily see that the world 'itself' and the world as it appears, the world of phenomena, differ only in the same way in which the whole differs from its component parts." [10] "A phenomenon is no more and no less different from the thing which produces it than the stretch of a twenty-mile road is different from the road itself" (p. 83). There is not, nor can there be any difference in principle; there can be no "transcendence," or "innate disagreement." But there is, to be sure, a difference involved in the transition from the bounds of sense-perceptions to the existence of things outside of us.

"We learn by experience that each experience is only a part of that which, in the words of Kant, surpasses all experience. . . . In the sense of the cognition conscious of its own nature, each particle, be it of dust or of stone or of wood, is incomprehensible as to its whole extent, each particle being an inexhaustible material for the human faculty of cognition, consequently something which surpasses all experience" (*Philosophical Essays*, p. 284).

To write, "in the words of Kant," to accept for purposes of popularisation the erroneous, baffling terminology of Kant, means

[10] Joseph Dietzgen: *The Positive Outcome of Philosophy*, Chicago, 1906, p. 75; *Cf.* some of the *Philosophical Essays*, Chicago, 1908, p. 284.

that Dietzgen recognised the transcendental existence of something "beyond experience." This is a good example of what the Machians will fasten upon in order to justify their change from materialism to agnosticism. You see, they say, we do not wish to go beyond the "bounds of experience," for us "sense-perception is the reality external to us."

"Morbid mysticism," objects Dietzgen to such philosophy, "separates unscientifically the absolute truth from the relative truth. It makes of the phenomenal thing and of the 'thing-in-itself,' that is, of the phenomenon and truth, two categories which differ completely from each other and are not contained in one united category" (p. 285). We may now judge of the enlightenment and ingenuity of the Russian Machian, Bogdanov, who does not wish to call himself a Machian but wishes to be considered a Marxist in philosophy.

"The golden mean between panpsychism and panmaterialism [11] has been taken by the materialists of the more critical shade. They have rejected the notion of the absolute unknowableness of the thing-in-itself, but at the same time regard it as being *radically* different from the 'phenomenon' and, therefore, only dimly discernible in it; it is taken to be transempirical in content [that is, probably, as far as the "elements" are concerned which are not as such elements of experience], but yet lying within the bounds of what has been called the forms of experience, *i. e.*, time, space and causality. Such is approximately the standpoint of the French materialists of the eighteenth century and of the newer philosophers, Engels and his Russian follower, Beltov" [Plekhanov—*Ed.*].

This is a complete blunder. (1) The materialists of the seventeenth century, with whom Berkeley argues, hold that "objects-in-themselves" are unconditionally knowable, for our representations and ideas are only copies or reflections of those objects which exist "outside of the mind" (*see* Preface). (2) Feuerbach, and Dietzgen after him, decidedly oppose the radical separation introduced between the thing-in-itself and its phenomenon, and Engels, too, with his brief example of the transformation of the "thing-in-itself" into the "thing-for-us," attacks this position. (3) And, finally, to maintain that the materialists regard things-in-themselves as "only dimly discernible in the phenomena," is mere folly, as we have seen from Engels' refutation of the agnostic. The reason for Bogdanov's perversion of materialism is his misunderstanding of the relation

[11] *Empirio-Monism*, Bk. II, p. 40, 1907.

of absolute truth to relative truth (about which we shall speak later). As far as the "transempirical" thing-in-itself and "elements of experience" are concerned, they represent intrusions of what we have already seen to be Machian blunders. To "poll-parrot" the reactionary professors on the absurdity of materialism, to disavow Engels in 1907, to attempt to palm Engels off as an agnostic—that is the sum and substance of the philosophy of "recent positivism," upheld by the Russian Machians!

4. *Does Objective Truth Exist?*

Says Bogdanov: "As I understand it, Marxism represents the denial of the unconditional objectivity of any truth whatsoever, the denial that there is any such thing as a purely eternal truth."[12] What is meant by "unconditional objectivity"? "Eternal truth" is "an objective truth in the absolute meaning of the word," says Bogdanov, agreeing to recognise the existence of "objective truth only within the limits of a certain epoch."

Two questions are here confused: (1) Is there such a thing as objective truth, that is, can there be in human representation a given content whose truth does not depend upon the existence of either a subject, a human being, or on humanity in general? (2) And if objective truth does exist, can a human conception, which gives expression to it, express it as a whole, at one time, unconditionally, absolutely, or only approximately, relatively? The second question revolves around the correlation of absolute and relative truth.

As far as the second question is concerned, Bogdanov's answer is clear, open and definite. He denies completely the possibility of acquiring absolute truth and accuses Engels of eclecticism for making an opposite sort of admission. We shall speak later on about Bogdanov's discovery of eclecticism in Engels. Here we shall pause on the first question which Bogdanov very obscurely also answers in the negative, for although it is possible to deny the element of the relative principle in one human notion or another, without denying the existence of objective truth, yet it is impossible to deny the existence of absolute truth without denying the existence of objective truth. " . . . There is no criterion of objective truth," writes Bogdanov a little further (p. ix), "in Beltov's [Plekhanov's]

[12] *Empirio-Monism*, Bk. III, pp. iv, v.

sense of the word; the truth is an ideological form, an organising form of human experience. . . ."

This has nothing to do with "in the sense of Beltov," for the question here is about one of the fundamental philosophic problems and not at all about Beltov; nor has it to do with the criterion of truth which we must treat separately and not confound with the question as to whether objective truth exists. Bogdanov's negative answer to the latter question is clear: If truth is only an ideological form, it means that there cannot exist any truth independently of the subject, or of humanity, for as we both agree, we do not know any other ideology, besides a human one. And still clearer is his negative answer to the second half of his question: If truth is a form of human experience, it means that there cannot be any truth which would not depend upon humanity; there cannot be any objective truth.

The denial of objective truth by Bogdanov is agnosticism and subjectivism. The absurdity of this denial is evident when we consider the example of the scientific-historical truth quoted above. Natural science does not leave any room for doubt about the truth of its assertion that the earth existed before the appearance of man. From the viewpoint of the materialistic theory of knowledge it is quite consistent to hold that what is reflected exists in independence from what does the reflecting. In fact the doctrine of the independence of the outer world from consciousness is the fundamental proposition of materialism. The assertion of science that the earth existed before the appearance of man is an objective truth. This position is incompatible with the philosophy of the Machians, and with their doctrine of truth. For, if truth is an organising form of human experience, then any assertion about the existence of the earth without the experience of men cannot be true.

But this is not sufficient. If truth is only an organising form of human experience, then the teaching, say, of Catholicism may be considered as truth. For there is not the least doubt that Catholicism is an "organising form of human experience." Bogdanov himself senses the fallacy of this startling theory, and it is rather interesting to watch how he attempts to extricate himself from the mire into which he has fallen.

"The basis of objectivity," we read in Book I of *Empirio-Monism*, "must rest in the sphere of collective experience. We term those

data of experience objective which have the same meaning for us and for others. Not only must we base our activity upon them, if we desire to avoid contradiction, but *other* people must do likewise, in order not to arrive at a contradiction. The objective character of the physical world consists in that it exists not for each one personally, but for all [it is not true! it exists independently of 'all'], and therefore has a certain meaning which is the same for everybody. The objectivity of the physical order is its *general meaning*" (p. 25). "The objectivity of physical bodies which we encounter in our experience is established on the basis of the mutual verification and agreement of various people. In general, the physical world is a socially agreed, socially-harmonised, or in a word, a *socially-organised experience*" (p. 36).

We do not have to repeat that this idealistic definition of objectivity is essentially untrue, that the physical world exists independently of humanity and of human experience, and that the physical world existed at a time when no "sociability" and no "organisation" of human experience was possible.

We shall stop to point out the falsity of the Machian philosophy from still another angle. Objectivity is so defined that it embraces religious doctrines, which undoubtedly possess a "universal meaning." But let us continue with Bogdanov: "We remind the reader once more that objective experience is not at all social experience. . . . Social experience is by no means organised as a social whole, and always contains various contradictions, so that some parts of it do not agree with the others. House goblins and wood-demons can exist in the domain of social experience of a given people or a given group of people as, for example, the peasantry; but in socially-organised or objective experience they are not included, for they do not harmonise with the rest of collective experience or fit into its organised forms as, for example, its category of causal connection" (p. 45).

Of course it is very kind of Bogdanov "not to include" the social experience of ghosts and goblins into objective experience. But this well-meant "correction," which is in the spirit of anti-fideism, does not really "correct" the fundamental error of Bogdanov's whole position. His definition of objectivity and of the physical world absolutely breaks down because the doctrines of religion have a "general meaning," more widespread than those of science; the majority of mankind, let us remember, still clings to religion.

Catholicism is "socially organised, harmonised, and agreed upon" because of its centuries of historic development; and it can easily be "tied up" with the category of "causal connection," for religions did not originate without cause, they did not come into existence by accident and are still popular with the masses at the present time; and even our professors of philosophy quite "legitimately" adjust themselves to them. If this experience, which undoubtedly has a "universal meaning" and undoubtedly is socially organised, does not "harmonise" with the "experience" of science, it is because there is a fundamental difference between one and the other which Bogdanov eradicates when he rejects the notion of absolute truth. And though Bogdanov tries to "correct" himself by saying that fideism or clericalism does not harmonise with science, nevertheless, his denial of objective truth "harmonises" completely with fideism. Modern fideism does not reject science.—Oh! no, it only rejects the "exaggerated claims" of science, especially its claim to objective truth. If objective truth exists (as the materialists contend), if natural science, reflecting the outer world in human "experience," is alone capable of giving us objective truth, then every kind of fideism is absolutely false. But if there is no objective truth, if truth (including scientific truth) is only the organised form of human experience, then a way is left open for the fundamental postulate of clericalism; a door is opened for it, and a place cleared to house the "organising forms" of the religious experience.

The question is, should this denial of objective truth be attributed directly to Bogdanov, who refuses to call himself a Machian, or is it a consequence of the fundamental teachings of Mach and Avenarius? It is clear that the latter is the case. If only sensation exists (Avenarius, in 1876), if bodies are complexes of sensations (Mach, in the *Analysis of Sensations*), then it is obvious that we are confronted with a philosophical subjectivism, which inevitably leads to the denial of objective truth. And if sensations are called "elements," which in one aspect are physical and in another psychical, then, as we have seen, the starting point of empirio-criticism becomes only entangled but not rejected. Avenarius and Mach recognise sensations as the source of our cognition. They hold the viewpoint of empiricism (all cognition from experience) or sensationalism (all cognition from sensations). This viewpoint leads to the reassertion of the fundamental opposition between idealism and materialism; it does not eliminate that opposition, no matter in

what "new" verbal attire ("elements") it might be clothed. The solipsist, that is, the subjective idealist, and the materialist may recognise sensations as the source of our cognition. Both Berkeley and Diderot started from Locke. The first proposition of the theory of knowledge is that the sole source of our cognition is sensation. Having recognised the first proposition, Mach confuses the second important proposition, concerning the objective reality which is given to man in his sensations,—an objective reality which is the source of his sensations. Starting from sensations, it is theoretically possible to follow the line of subjectivism which leads to solipsism ("bodies are complexes or combinations of sensations"), or to follow the line of objectivism which leads to materialism (sensations are images of objects in the external world). The first viewpoint gives us agnosticism, and if we push it a little further, subjective idealism—for which there cannot be any objective truth. The second viewpoint, gives us materialism, for which the recognition of the objective truth is essential. This old philosophic question, out of which these two irreconcilable tendencies grow, is not solved by Mach; it is not eliminated or overcome by him, but is rather entangled through his juggling with the word "element," etc. The denial of objective truth by Bogdanov is an inevitable consequence of Machism, and not a deviation from it.

Engels, in his *Ludwig Feuerbach*, calls Hume and Kant philosophers "who dispute the possibility of knowing the world or at least of acquiring a thorough knowledge of it." Engels lays stress on that which Hume and Kant hold in common, not on that which divides them. He shows there that "the decisive arguments for the refutation of this [Humean and Kantian] view were already advanced by Hegel." In connection with this, it is noteworthy that Hegel regarded materialism as "a consistent system of empiricism." He wrote: "Generally speaking, empiricism finds the truth in the outward world; and even if it allow a supersensible world, it holds knowledge of that world to be impossible and would restrict us to the province of sensation. This doctrine when systematically carried out produces what has been latterly termed materialism. Materialism of this stamp looks upon matter, *qua* matter as the genuine objective world." [13]

All knowledge is derived from experience, from sensation, from

[13] Hegel: *Enzyclopädie der philosophischen Wissenschaften im Grundrisse, Werke*, 1843, Vol. IV, p. 83; *Cf.* p. 122.

perception; this is true. But the question remains, is the source of perception, objective reality? If you answer affirmatively, then you are a materialist. If not then you inevitably come to subjectivism, or agnosticism, irrespective of whether you deny the knowledge of the thing-in-itself, or the objectivity of time, space, causality (Kant), or whether you reject the idea of the thing-in-itself (Hume). The inconsistency of your empiricism, of your philosophy of experience, will lie in the fact that you are denying the objective content of experience, the objective truth of empirical knowledge.

Those who follow the line of Kant and Hume (Mach and Avenarius included, since they are not pure Berkeleians) call us materialists, "metaphysicians," because we recognise the objective reality which is given us in experience, because we recognise an objective and independent source of our sensations. We materialists, after Engels, term the Kantians and Humeans, agnostics, because they deny the objective reality of the source of our sensations. Agnostic is a Greek word: *a* "no," *gnosis* "knowledge." The agnostic says I do not know whether there is an objective reality which reflects and is reflected by our sensations; I declare it impossible to know. (*Cf.* citation above from Engels' in which the position of the agnostic is presented.) Hence the denial of objective truth by the agnostic, and the tolerance—a bourgeois, philistine, cowardly tolerance—of the dogmas of house goblins and wood-demons, Catholic saints and the like. Mach and Avenarius, pretentiously employing a "new" terminology, advancing a supposedly "new" viewpoint, in fact repeat the agnostic's position in a confusing way. On the one hand bodies are complexes of sensation (pure subjectivism, pure Berkeleianism); on the other hand, if we christen our sensation "elements," it becomes possible to think of their existence independently of our sense-organs!

The Machians like to recite this theme. They like to say that they are philosophers who absolutely trust the evidence of their sense-organs, that they account the world as it actually seems to us, full of sounds, colours, etc., while the materialists, as it were, regard the world as dead, without sound or colour, distinct in its nature from what it seems to us, and so on. In such wise, does Petzoldt hold forth in his *Einführung in die Philosophie*, etc., and in his *Das Weltproblem vom positivistischen Standpunkte aus* (1907). Victor Chernov, enthusiastic over the "new" idea, apes Petzoldt.

But in truth the Machians are subjectivists and agnostics, for they do not sufficiently trust the evidence of our sense-organs and are inconsistent in their sensationalism. They do not recognise objective reality as the source of our sensations. They do not see in sensations the true copy of this objective reality, thus coming into direct contradiction with natural science and opening the door to fideism. On the other hand, for the materialist the world is richer, livelier, more varied than it actually seems, for with each scientific step taken in advance, new parts of it are discovered. To the materialist, sensations are images of the ultimate and only objective reality, ultimate not in the sense that it is already explored to the end, but in that there is not and cannot be any other besides it. This viewpoint irrevocably closes the door, not only to all sorts of fideism, but also to that professorial scholasticism which, without regarding objective reality as the source of our sensations, "infers" the existence of the objective, by means of such sham verbal constructions, as "unique determination," "the socially-organised," so that it is finally reduced to a position in which it is unable to separate objective truth from the belief in wood and house spirits.

The Machians contemptuously shrug their shoulders at the "antiquated" views of the "dogmatic" materialists who still cling to the conception of matter which has been supposedly refuted by "recent" science and "recent positivism." We will speak separately of the new theories of physics, concerning the nature of matter. It is unpardonable to confound, as the Machians do, the teaching of this or the other construction of matter with the epistemological category, to confound the problem of the new properties of the new species of matter (electrons, for instance) with the old problem of the theory of knowledge, with the problem concerning the sources of our cognition—or the existence of objective truth, etc. Mach "discovered the world elements," we are told: red, green, hard, soft, loud, long, etc. We ask whether or not objective reality is assumed as given us, when we see red or perceive hard. This hoary philosophic question is confused by Mach. If one holds that it is not given, then he is relapsing together with Mach, into subjectivism and agnosticism and into the arms of the immanentist school, who are really philosophic Menshikovs. If one holds that it is given, then a certain philosophic doctrine necessarily follows. Such a doctrine has long since been worked out, namely, materialism. Mat-

ter is a philosophic category which refers to the objective reality given to man in his sensations,—a reality which is copied, photographed, and reflected by our sensations, but which exists independently of them. To say that such a doctrine can become antiquated, is childish prattle and merely a senseless repetition of the arguments of the fashionable reactionary philosophy. When could the struggle between materialism and idealism have become antiquated during the two thousand years of the development of philosophy? Recall the conflicts which have been waged over the following issues: the tradition of Plato or the tradition of Democritus; the struggle between religion and science; the denial of objective truth and its assertion: the struggle between those who believed in supersensible knowledge and their adversaries.

The acceptance or rejection of the notion of matter presents a problem concerning the confidence of man in the evidence of his sense-organs, a problem which bears on the question of the source of our cognition, one which has been asked, answered and debated from the very inception of philosophy, one which can be elaborated in thousands of ways by professorial circus-clowns, but which can no more become obsolete than the question as to whether the source of human cognition is sight, hearing and smell. To regard our sensations as copies of the external world, is to admit an objective truth, that is, to hold a materialistic point of view. To illustrate this, I will adduce a quotation from Feuerbach and from two textbooks of philosophy, in order that the reader may judge the elementary nature of this question.

"How vulgar it is," wrote Feuerbach, "to refuse to acknowledge that sensation is the gospel, the dispensation of the objective saviour."[14] As you see, a strange, queer terminology, but a perfectly clear philosophic line: sensation reveals the objective truth to us. "My sensation is subjective, but its foundations or grounds are objective" (*ibid.*, p. 195). Compare the quotation where Feuerbach says that materialism regards the perceptual world as the ultimate objective truth.

"Sensationalism," we read in Frank's Dictionary,[15] "is a doctrine which infers all our ideas from the experience of perceptions, reducing knowledge to sensation. There is subjective sensationalism [scepticism and Berkeleianism], moral sensualism [Epicureanism],

[14] Feuerbach: *Sämmtliche Werke*, 1866, Vol. X, p. 194.
[15] *Dictionnaire des sciences philosophiques*, Paris, 1875.

and objective sensationalism. Objective sensationalism is materialism, for matter or bodies are, in the opinion of the materialists, the sole objects which can affect our senses (*atteindre nos sens*)."

"If sensationalism," says Schwegler,[16] "asserts that truth or being can be known exclusively by means of the senses, the only thing that remains [the question concerns the philosophy at the end of the eighteenth century in France] is to formulate objectively this proposition: 'Only the perceptual exists; there is no other being save material being.' This is the thesis of materialism."

These truisms, which have found their way even into the textbooks, have been forgotten by our Machians.

5. *Absolute and Relative Truth, or on the Eclecticism of Engels Discovered by Bogdanov*

Bogdanov made this discovery in 1906 announcing it in the preface of Book III of his *Empirio-Monism.* "Engels in *Anti-Dühring,*" writes Bogdanov, "expresses himself almost in the same sense which I characterised as 'the relativity of truth' (p. v), that is, in the sense of the denial of eternal truth, the denial of the absolute objectivity of whatever truth there is. . . . Engels mistakenly wavers in his views when he ironically recognises certain wretched eternal truths (p. viii). . . . Only inconsistency can account for Engels' eclectic reservations in this connection . . ." (p. ix). Let us cite one instance of Bogdanov's refutation of Engels' eclecticism. "Napoleon died on May 5, 1821," says Engels, in *Anti-Dühring,* in the chapter, "Eternal Truths," where he treats of the platitudes which one must encounter in pretending to find eternal truths in historical sciences. Bogdanov thus answers Engels: "What 'truth' is it? And what is there 'eternal' about it? The constancy of the one-to-one correspondence between a point-instant of time and the death of Napoleon has no longer any real significance for our generation, it cannot serve as the starting point for any activity, and it leads nowhere" (p. ix). And on p. viii: "Can you call *Plattheiten Wahrheiten?* Are platitudes truths? The truth is a vital organising form of experience; it leads us somewhere in our activity and gives us a prop in the struggle of life."

It is sufficiently clear from these two quotations, that instead of

[16] Dr. Albert Schwegler: *Geschichte der Philosophie im Unriss,* 15 ed., p. 194.

refuting Engels, Bogdanov is really beating air. If you are not in a position to maintain that the proposition, "Napoleon died on May 5, 1821," is false, then you are practically acknowledging that it is true. If you do not assert that it can be refuted in the future, then you are acknowledging this truth to be eternal. But to present such phrases as that the truth is a "vital organising form of experience" as an answer is to offer a jumble of words as philosophy. Was the earth evolved in the manner taught by the science of geology, or was the earth created in seven days? Is it really possible to dodge the question by phrases of "vital" (what does it mean?) truth which "leads" somewhere? Is it true that the knowledge of the earth's history and the history of humanity "have no real significance"? But this is only a trifle by the means of which Bogdanov covers his retreat. Having taken it upon himself to prove that the admission of eternal truths by Engels is eclecticism, it is no more than a transparent dodge to settle the question verbally and leave unrefuted the fact that Napoleon really died on May 5, 1821. To think that this truth can possibly be refuted in the future is absurd.

The example taken by Engels is elementary, and anybody can present scores of such truths (as *e. g.*, the other instance of Engels, that Paris is in France), which are eternal and absolute, and which only insane people can doubt. Why does Engels speak of "platitudes"? Because he ridicules and refutes the dogmatic, metaphysical materialist, Dühring, who could not apply dialectics to the question of the relation between absolute and relative truth. To be a materialist is to acknowledge objective truth revealed by our sense-organs. To acknowledge as objective truth, a truth independent of man and mankind, is to recognise in one way or another, absolute truth. Now, this "one way or another" separates the metaphysical materialist Dühring from the dialectical materialist Engels. Dühring juggled with the words "last, final, eternal truth" in discussing the most complicated questions of science, and especially in discussing history. Of course, there are eternal truths, says Engels, but it is unwise to use "high-sounding" words (*gewaltige Worte*) for small matters. To further materialism, we must drop the vulgar play upon the expression "eternal truth"; we must know how to put, and solve dialectically, the question of the correlation between absolute and relative truths. This was the source of the struggle between Dühring and Engels which took place thirty

years ago. And Bogdanov, who manages "not to have noticed" Engels' explanation of the problem of absolute and relative truth given in the same chapter, and who accuses Engels of "eclecticism" for his admission of a proposition which is a truism for every sort of materialism, once more reveals his complete ignorance of materialism and dialectics.

"We now come to the question," Engels writes in *Anti-Dühring*, in the chapter mentioned, "as to what product, if any, of human knowledge can especially have 'sovereign validity' and 'unrestricted claims to truth'" (*loc. cit.*, p. 118). Engels thus solves the problem:

"The sovereignty of thought is realised in a number of highly unsovereign men capable of thinking; the knowledge which has unlimited pretensions to truth is realised in a number of relative blunders; neither the one nor the other can be fully realised except through an endless eternity of human existence.

"We have here again the same contradiction as above between the necessary, as an absolute, conceived characteristic of human thought, and its reality in the very limited thinking single individual, a contradiction which can only be solved in the endless progression of the human race, that is, endless as far as we are concerned. In this sense human thought is just as sovereign as not . . . and its possibility of knowledge just as unlimited as limited. It is sovereign and unlimited as regards its nature, its significance, its possibilities, its historical end; it is not sovereign and limited with respect to individual expression and its actuality at any particular time.[17] It is just the same with eternal truths" (p. 119).

This discussion is very important for the question of relativism, or the principle of the relativity of our knowledge which is emphasised by all Machians. The Machians insist that they are relativists, but the Russian Machians, repeating those words after the Germans, are afraid to, or cannot, put clearly and directly the question concerning the relation of relativism to dialectics. For Bogdanov (as for all the Machians) the recognition of the relativity of our knowledge excludes the least admission of absolute truth. For

[17] *Cf.* V. Chernov: *loc. cit.*, p. 64 *ff.* The Machian Chernov occupies entirely the position of Bogdanov who does not wish to be regarded as a Machian. The difference is that Bogdanov tries to cover up his disagreement with Engels, to present it as an accident, etc., while Chernov feels that it is a question of a struggle against both materialism and dialectics.

Engels absolute truth is made up of relative truths. Bogdanov is a relativist; Engels is a dialectician. Here is another no less important discussion of Engels from the same chapter of *Anti-Dühring*:

"Truth and error, like all such mutually antagonistic concepts, have only an absolute reality under very limited conditions, as we have seen, and as even Herr Dühring should know by a slight acquaintance with the first elements of dialectics, which show the insufficiency of all polar antagonisms. As soon as we bring the antagonisms of truth and error out of this limited field it becomes relative and is not serviceable for new scientific statements. If we should seek to establish its reality beyond those limits we are at once confronted by a dilemma, both poles of the antagonism come into conflict with their opposite; truth becomes error and error becomes truth" (*ibid.* p. 125). There follows the example of Boyle's law (that the volume of gas is inversely proportional to its pressure). . . . The "particle of truth" contained in that law is only absolute truth within certain limits. The law is proven to be a truth "only approximately."

Human reason then in its nature is capable of yielding and does yield the absolute truth which is composed of the sum-total of relative truths. Each step in the development of science adds new fragments of truth, and from this the absolute truth is constituted, but the limits of the truth of each scientific statement are relative, now expanding, now shrinking with the growth of science. "Absolute truth," says Dietzgen in his *Excursions,* "can be seen, heard, smelt, touched and, of course, also known; but it cannot be resolved into pure knowledge, it is not pure mind . . .(p. 281). How can a picture 'conform' with its model? Approximately it can. What picture worth the name does not agree approximately with its object? Every portrait is more or less of a likeness. But to be altogether alike, quite the same as the original—what a monstrous idea!

"We can only know nature and her parts relatively, since even a part, though only a relation of nature, possesses again the characteristics of the Absolute, the nature of the All-Existence which cannot be exhausted by knowledge.

"How, then, do we know that behind the phenomena of Nature, behind the relative truths, there is a universal, unlimited, absolute nature which does not reveal itself completely to man? . . .

Whence that knowledge? It is innate; it is given us with consciousness" (p. 283).

This last phrase is one of Joseph Dietzgen's inexact expressions, which led Marx, in one of his letters to Kugelmann, to make note of the confusion in Dietzgen's views. Only by seizing upon these incorrect and unessential phrases can one speak of a special philosophy of Dietzgen which is supposedly different from dialectical materialism. But Dietzgen corrects himself on the same page: "When I say that the consciousness of the endless, absolute truth is innate in us, is the one and only knowledge *a priori*, I am confirmed in my statement also by the experience of this innate consciousness."

From all these statements of Engels and Dietzgen it is obvious that as far as dialectical materialism is concerned there does not exist a fixed immutable boundary between relative and absolute truth. Bogdanov did not grasp this at all, as is evident from the fact that he could bring himself to write the following: "Old-fashioned materialism sets itself up as the absolute *objective knowledge of the essence of things* [Bogdanov's italics] but this is incompatible with the historical conditioning features of any particular ideology." [18]

From the standpoint of modern materialism, or Marxism, the relative limits of our approximation to the cognition of the objective, absolute truth are historically conditioned; but the existence of this truth is unconditioned, as well as the fact that we are continually approaching it. The general outlines of a picture are historically conditioned, but it is unconditionally true that this picture reflects an objectively existing model. Historically conditioned are the circumstances under which we made progress in our knowledge of the essence of things. For example, the *discovery* of alizarine in coal tar was historically conditioned, or the *discovery* of the electronic structure of the atom was historically conditioned; but it is unconditionally true that every such discovery is a step forward to "absolute objective knowledge." In a word, every ideology is historically conditioned, but it is unconditionally true that to every scientific theory (as distinct from religion), there corresponds an objective truth, something absolutely so in nature. You will say that this distinction between relative and absolute truth is indefinite. And I will reply that it is sufficiently indefinite

[18] *Empirio-Monism*, Bk. III, p. iv.

to prevent science from becoming dogmatic, in the bad sense of the word, from becoming dead, frozen, ossified; but it is at the same time sufficiently "definite" to preclude us from espousing any brand of fideism or agnosticism, from embracing the sophistry and philosophical idealism of the followers of Hume and Kant. Here is a boundary which you have not noticed, and not having noticed it, you have fallen into the mire of reactionary philosophy. It is the boundary between dialectical materialism and relativism.

We are relativists, declare Mach, Avenarius and Petzoldt. We are relativists, Mr. Chernov, and a few Russian Machians who wish to be Marxians, echo after them. In this, Mr. Chernov and my Machian comrades, lies your error. To make relativism the basis of the theory of knowledge is inevitably to condemn oneself to absolute scepticism, agnosticism and sophistry, or subjectivism. Relativism as the basis of the theory of knowledge is not only a recognition of the relativity of our cognition, but is tantamount to the denial of the existence of an objective limit or goal independent of humanity to which our cognition approaches. From the point of view of mere relativism one can justify any sophistry, one can even regard the statement "Napoleon died on May 5, 1821," as conditioned; one can declare things to be true for the "convenience" of an individual or humanity, as well as recognise scientific ideology to be "convenient" in one respect and religious ideology to be very "convenient" in another, etc.

Dialectics, as Hegel explained it, includes an "element" of relativism, of negation and scepticism, but it is not thereby reduced to relativism. The materialist dialectics of Marx and Engels certainly does contain relativism, but it is not reduced to it, that is, it recognises the relativity of all our knowledge, not in the sense of the denial of objective truth, but in the sense of the historical conditions which determine the degrees of our knowledge as it approaches this truth.

Bogdanov writes in italics: "*Consistent Marxism does not admit such dogmatism and such static expressions*" as eternal truths.[19] This is a blunder. If the world is an eternally moving and developing material mass (as the Marxians assume) which reflects a progressive human consciousness, what has all this to do with the notion of the "static"? The question at issue here is not one concerning the intrinsic essence of things, nor of the intrinsic nature

[19] *Empirio-Monism*, Bk. III, p. ix.

of consciousness, but of the correspondence between the consciousness which reflects nature, and the nature which is reflected by consciousness. In this question, and in this question alone, the term "dogmatism" has a special, characteristic philosophic flavor; it is the favourite word which the idealists and the agnostics hurl against the materialists, as we have already seen from the example of the very "old" materialist, Feuerbach. The objections that are raised from the standpoint of the prominent "recent positivists" against materialism are as old as they are trashy!

6. *The Criterion of Practice in the Theory of Knowledge*

We have seen that Marx, in 1845, and Engels, in 1888 and 1891, introduced the criterion of practice into the theory of knowledge of materialism. To ask outside the realm of practice whether "the objective truth corresponds to human reason" is scholasticism, says Marx in his second thesis on Feuerbach. The best refutation of Kantian and Humean agnosticism as well as of other philosophic whims (*Schrullen*) is practice, repeats Engels. "The success of our actions proves the correspondence (*Uebereinstimmung*) of our perception with the objective nature of the objects perceived," he answers the agnostics.

Compare with this the argument of Mach regarding the criterion of practice:

"A common and popular way of thinking and speaking is to contrast 'appearance' with 'reality.' A pencil held in front of us in the air is seen by us as straight; dip it into the water, and we see it crooked. In the latter case we say that the pencil *appears* crooked, but is in reality straight. But what justifies us in declaring one fact rather than another to be the reality, and degrading the other to the level of appearance? In both cases we have to do with facts which present us with different combinations of the elements, combinations which in the two cases are differently conditioned. Precisely because of its environment the pencil dipped in water is optically crooked; but it is tactually and metrically straight. An image in a concave or flat mirror is *only* visible, whereas under other and ordinary circumstances a tangible body as well corresponds to the visible image. A bright surface is brighter beside a dark surface than beside one brighter than itself. To be sure, our expectation is deceived when, not paying sufficient

attention to the conditions, and substituting for one another different cases of the combination, we fall into the natural error of expecting what we are accustomed to, although the case may be an unusual one. The facts are not to blame for that. In these cases, to speak of "appearance" may have a practical meaning, but cannot have a scientific meaning. Similarly, the question which is often asked, whether the world is real or whether we merely dream it, is devoid of all scientific meaning. Even the wildest dream is a fact as much as any other." [20]

It is true that not only is the wildest dream a fact, but the wildest philosophy as well. There can be no doubt about it after our acquaintance with the philosophy of Ernst Mach. As the last sophist, he confounds scientific-historical, psychological investigations of human errors, all kinds of "wild dreams" of humanity, such as faith in spooks, with the epistemological differentiation of truthful and "wild." It is as if an economist would say that the theory of Senior, that the whole surplus value of the capitalist is given to him at the "last hour" of the worker's labour-time, and the theory of Marx are both a fact; and from the point of view of science there is no sense in the question as to which theory expresses objective truth and which the prejudice of the bourgeoisie and the corruption of its professors.

The tanner, Joseph Dietzgen, saw in the scientific, that is, materialist theory of knowledge a "universal weapon against religious belief," and yet for Professor Ernst Mach, the difference between the materialist and the subjective-idealist theories of knowledge "is devoid of all scientific meaning." That science is impartial in the clash of materialism, idealism and religion, is a favourite idea not only of Mach, but of all modern bourgeois professors, who are, to quote Dietzgen, "graduated flunkeys using their sham idealism to keep the people in ignorance" (*loc. cit.*, p. 130).

It is sham professorial idealism when the criterion of practice, which makes a distinction between illusion and actuality, is taken by Mach out of the realm of science, out of the theory of knowledge.

Human practice proves the correctness of the materialist theory of knowledge, said Marx and Engels, declaring as "scholastic" and "philosophic legerdemain," all attempts to solve fundamental epistemological questions which ignore practice. For Mach practice is one thing, and the theory of knowledge another. "Cognition,"

[20] *Analysis of Sensations*, p. 10.

says Mach, in his last work, *Erkenntnis und Irrtum*, "is a biologically useful mental experience. Only success can separate knowledge from error (p. 116). . . . Understanding is a physical working hypothesis" (p. 183). Our Russian Machians, who wish to be Marxians, accept with a peculiar naïveté such phrases of Mach as proof that he borders very closely on Marxism. But Mach borders on Marxism as closely as Bismarck bordered on the labour movement or Bishop Yevlogy [21] on democracy. With Mach, such assumptions stand side by side with his idealist theory of knowledge, but do not preponderantly determine the choice of a fundamental tendency or theory in epistemology. Knowledge may be biologically useful, useful in human practice, in the preservation of the species, but it is useful only when it reflects an objective truth, independent of man. For a materialist, the "success" of human practice proves the correspondence of our representations to the objective nature of the things we perceive. For a solipsist, "success" is restricted to what is needed only in practice, and can be dissevered from the theory of knowledge. To include the criterion of practice as the basis of the theory of knowledge is inevitably to come to materialism, says the Marxian. Practice has a materialistic reference, says Mach, but the theory of practice is a different article.

"Now in practice," Mach writes in the *Analysis of Sensations*, "we can as little do without the Ego-presentation when we act, as we can do without the presentation of a body when we grasp at a thing. Physiologically we remain egoists and materialists, just as we always see the sun rise again. But theoretically this way of looking at the matter cannot be maintained" (p. 357).

Egoism is beside the point here, for egoism is not an epistemological category. The question of the rising of the sun is also beside the point, for in practice, which serves us as a criterion in the theory of knowledge, we must include also the practice of astronomical observations, discoveries, etc. There remains only Mach's valuable admission that men in their practice are totally and exclusively guided by a materialist theory of knowledge; the attempt to overlook it "theoretically" is characteristic of the scholastic erudition and sham idealist endeavours of Mach.

That these attempts to eliminate practice, in order to make room

[21] Bishop Yevlogy (Vassiliyi Georgievsky, born 1868) was Bishop of Kholm and Liublin, Rector of the Kholm Theological Seminary, member of the Second *Duma*,—an extreme reactionary and monarchist leader.—*Ed.*

for agnosticism and idealism, on the grounds that practice is irrelevant to epistemology, are by no means new, can be seen in the following example from the history of German classical philosophy. Midway between Kant and Fichte stands Schulze (in the history of philosophy, the so-called Schulze-Aenesidemus). He openly defends the sceptical alignment in philosophy, considering himself a follower of Hume (and of the ancients, Pyrrho and Sextus). He decidedly rejects the thing-in-itself and the possibility of objective knowledge, and insists that we should not go beyond "experience," beyond sensations, while he foresees the following objection from the other camp. He says: "Since a sceptic, by participating in affairs of life, recognises as indubitable the reality of objective things, behaves accordingly and admits the criterion of truth, his own behaviour is the best and most obvious refutation of his scepticism." [22] "Such proofs," Schulze objects angrily, "are only valid for the mob; my scepticism does not touch upon practical life, but remains within the domain of philosophy" (p. 255). But the subjective idealist Fichte, too, hopes to find room within the domain of idealism for that "realism which is inevitable for all of us and even for the most determined idealist when it comes to practice,—that realism which assumes that objects exist absolutely independent of us and outside of us." [23]

The recent positivism of Mach has not gone very far from Schulze and Fichte! Let us note as a curiosity that for Bazarov also in this question, no one exists save Plekhanov—for him, too, there is no stronger beast than a cat. Bazarov ridicules the "salto-vitale" philosophy of Plekhanov (*Outlines*, p. 69), who really made the absurd remark, that "belief" in the existence of the outer world is an inevitable "salto-vitale" (vital leap) in philosophy.[24] The word "belief," though put in quotation marks (after Hume), discloses a confusion of terms in Plekhanov. There can be no question about it. But what has the problem particularly to do with Plekhanov? Why has not Bazarov taken another materialist, let us say, Feuerbach? Is it because he does not know him? But ignorance is no argument. Feuerbach also, like Marx and Engels, make an inadmissible "leap" (from the viewpoint of Schulze,

[22] G. E. Schulze: *Aenesidemus oder über die Fundamente der von Prof. Reinhold in Jena gelieferten Elementarphilosophie*, 1792, p. 253.

[23] *Werke*, Vol. I, p. 455.

[24] *Ludwig Feuerbach*, Plekhanov's notes to the Russian translation, Geneva, 1905, p. 111 (in Russian).

Fichte and Mach) to practice, in the fundamental problems of epistemology. Criticising idealism, Feuerbach presents its essence in the following significant quotation from Fichte which demolishes Machism. "You assume," writes Fichte, "that things are real, that they exist outside of you only because you see them, hear them and touch them. But vision, touch and hearing are only sensations . . . You perceive, not the objects, but your perceptions." [25] And Feuerbach replies: "A human being is not an abstract ego; he is either a man or a woman. The question, whether the world is perception, can be compared to the question, whether a human being is my perception, or our relations in practical life prove the contrary? The fundamental error of idealism is that it asks and answers the question about objectivity and subjectivity, about the reality or unreality of the world only from the theoretical viewpoint" (*ibid*, p. 189). Feuerbach absorbs the sum-total of human practice into the theory of knowledge. He says: "Of course, idealists also recognise the reality of the I and Thou in practical life. For the idealists this viewpoint is good only for life and not for speculation. But a speculation which contradicts life, which sets in place of the standpoint of truth the standpoint of death, which separates the soul from the body, is a false and dead speculation [p. 192]. Before perceiving we breathe; we cannot exist without air, food and drink."

" 'Does this mean that we must deal with questions of food and drink in examining the problem of the ideality or reality of the world?' exclaims the indignant idealist. How base! What an offence to good manners to scold a refined, scientific materialism from the chair of philosophy and theology, only to *practise* the crudest sort of it at the table" (p. 196). And Feuerbach exclaims, to make subjective perception equivalent to the objective world "is to identify pollution with childbirth" (p. 198).

The remark is not a polite one, but it hits the mark of those philosophers who teach that sense-perception is the reality existing outside of us.

From the standpoint of life, practice ought to be the first and fundamental criterion of the theory of knowledge. It inevitably leads to materialism, brushing aside the infinite inventions of professorial scholasticism. Of course, we must not forget that the criterion of practice, in the nature of things, neither confirms nor

[25] Feuerbach: *Werke*, Vol. X, p. 185.

refutes completely any human presentation. This criterion is sufficiently indefinite not to allow human knowledge to become "absolute," and at the same time sufficiently definite to wage a bitter struggle with all varieties of idealism and agnosticism. If that which our practice confirms, is the sole, ultimate and objective truth, then it follows that the sole path to this truth is the road of science which stands by the materialist creed. For instance, Bogdanov agrees to recognise Marx's theory of the circulation of capital as an objective truth only for "our time," regarding as "dogmatism" the designation of this theory as an "historically objective" truth.[26] This again is a blunder. No future circumstances can change the correspondence of this theory with the fact, for the simple reason that such a truth is as eternal as that Napoleon died on May 5, 1821. But inasmuch as practice, *i. e.*, the development of capitalist countries in the last few decades, actually proves the objective truth of the whole social and economic theory of Marx in general, and not only some of its specific formulations, it is obvious that to speak here of the "dogmatism"of the Marxists, is to make an inexcusable concession to bourgeois economy. The sole inference from the proposition upheld by Marxists, that the theory of Marx is the objective truth, is this: Following in the direction of the Marxian theory, we shall draw nearer and nearer to the objective truth (without exhausting it); following another path, we shall arrive at confusion and falsehood.

[26] *Empirio-Monism*, Bk. III, p. vii.

CHAPTER THREE

THE THEORY OF KNOWLEDGE OF EMPIRIO-CRITICISM AND DIALECTIC MATERIALISM III

1. *What Is Matter? What Is Experience?*

THE idealists and agnostics, including the Machians, ply the materialists with the first question; the materialists ply the Machians with the second. We shall attempt to examine both.

Regarding matter, Avenarius says the following: "Within the neutral complete 'experience' there is nothing 'physical,' nothing which can in the metaphysical sense be called 'matter,' for 'matter' is only an abstraction; it would be a result of the combination of counter terms abstracted by some central term. As in 'essential co-ordination,' that is in 'complete experience,' the counter term is inconceivable without the central term, so, in the absolute metaphysical conception, 'matter' is a perfect absurdity." [1]

One thing is obvious from this prattle: Avenarius designates the physical or matter by the terms "absolute" and "metaphysics," for, according to his theory of essential co-ordination (or in the new way, "complete experience"), the counter term is inseparable from the central term, the environment, from the self; the non-self (as Fichte said) is inseparable from the self. That this theory is a travesty of subjective idealism we have already shown elsewhere. The nature of Avenarius' attacks upon "matter" is quite manifest; the idealist denies the physical to be independent of the mental and, therefore, rejects the conception elaborated by philosophy for such an entity. That matter is "physical" (that is, the most familiar and immediately given, whose existence no one save the inmates of the insane asylums doubts) is not denied by Avenarius; he only insists upon the acceptance of "his" theory of the continual co-ordination of the environment and the Self.

Mach expresses this thought in a simpler way, without philo-

[1] *Bemerkungen*, § 119, p. 234.

sophic legerdemain: "What we call matter is a combination of the elements or sensations according to certain laws." [2] Mach thinks that by making such an assertion he produces a "radical change" in the customary analysis. In truth this is the very same old subjective idealism over again, the nudity of which is concealed under the word "element."

And lastly, Pearson, the English Machian, who strenuously contends against materialism, says: "Now there can be no scientific objection to our classifying certain more or less permanent groups of sense-impressions together and terming them matter, to do so indeed leads us very near to John Stuart Mill's definition of matter as a 'permanent possibility of sensation,' but this definition of matter then leads us entirely away from matter as the thing, which moves." [3] Here there is not even the fig-leaf of "elements," and the idealist offers his hand to the agnostic.

As the reader sees all the arguments of the founders of empirio-criticism turn totally and exclusively within the limits of the very old epistemological question of the relation of thinking to being, of the psychical to the physical. It requires the extreme naïveté of the Russian Machians to find anything here which is related to "recent science," or "recent positivism." All the philosophers mentioned here, directly or indirectly, swerve from the fundamental philosophic alignment of materialism (from being to thinking, from matter to sensation) to the contrary idealist alignment. Their denial of matter is the old solution of the epistemological difficulty, which contests the existence of an external, objective source of our sensations and of a reality which corresponds to them. And the converse, disputed by the idealists and agnostics, is expressed in the following definitions: Matter is that which, acting upon our sense-organs, produces sensation; matter is the objective reality, given to us in sensation, and so forth.

Bogdanov, pretending to argue only with Beltov, while ignoring Engels, is indignant at such definitions, which, as you see, "prove to be simple repetitions" [4] of the "formula" (our "Marxist" forgets to add "of Engels") that matter is primary, and spirit secondary, for one fundamental tendency in philosophy and that for the other, the reverse is the case. All the Russian Machians exultantly repeat

[2] *Analysis of Sensations*, p. 331.
[3] *The Grammar of Science*, London, 1900, p. 249.
[4] *Empirio-Monism*, Bk. III, p. xvi.

the "refutation" of Bogdanov! But some reflection upon the subject should show these people that it is impossible to give any other definition of these two conceptions in epistemology, aside from reference and emphasis upon what is taken as the *prius*. Now, what is meant by giving a "definition"? It means first of all to subsume a given concept under another, a more inclusive one. For example, when I express the proposition "An ass is an animal," I am subsuming the concept "ass" under a more inclusive concept. The question then is, are there any wider concepts, with which the theory of knowledge could operate, than those of "being" and "thinking," "matter" and "sensation," "physical" and "psychical"? No, there are not. These are the limits, the widest possible concepts, and farther than these (omitting the possible changes in nomenclature) the theory of knowledge can not go. Only charlatanism or poor mentality can demand "definitions" of these two "sets" of the widest concepts which would not be a "mere repetition": one or the other must be taken as the *prius*. Take the three arguments concerning matter which have been given. To what can they be reduced? To this, that these philosophers go from "the mental" or "self" to the physical or environment, from the "central" term to the "counter" term, from sensation to matter, or from sense-impression to matter. Can Avenarius, Mach and Pearson essentially give any other "definition" of their fundemental conceptions, except by reiterating the direction of their philosophic alignment? Can they in a different, specific way define what the self is, what sensation is, or sense-perception? It suffices only to put the question clearly, in order to understand the absurdity of the Machian demand that the materialists give a definition of matter which will not express once more the assumption that matter, nature, being, the physical, is the primary entity, and spirit, consciousness, sensation, mind, is the secondary entity.

The genius of Marx and Engels expressed itself in that they despised the pseudo-erudite play upon new words, wise terms, cunning "isms." They simply and explicitly said that there was a materialist and idealist division in philosophy, and between them there are various shades of agnosticism. The desire to find a "new" viewpoint in philosophy betrays the same poverty of spirit, as the desire to create a "new" theory of value, or a "new" theory of rent.

Carstanjen, a disciple of Avenarius, informs us that his teacher

thus expressed himself in a private conversation: "I do not know either physical or psychical, but only a third 'entity'"! To the remark of one writer, that the concept of this third is not given by Avenarius, Petzoldt replied: "We know why he was not able to present such a concept. There is no counter concept for the third entity. (*Gegenbegriff* of the correlative concept). . . . The question as to what the third entity is, is not logically put."[5] Petzoldt understands that it is impossible to define the last concept. But he does not understand that the reference to the "third entity" is mere trickery, for every one of us knows what is physical and what is psychical; but we do not at present know what that "third" is. Although in fact he declares the self to be the primary entity (central term), and nature (environment) to be the secondary entity (counter term), Avenarius wipes out his tracks with this verbal trickery.

Of course, the contradistinction between matter and mind has an absolute significance only between the boundaries of a very limited region—in this case exclusively within the limits of the fundamental epistemological problem of what was to be considered primary and what secondary. Beyond these bounds the relativity of the contradistinction is unquestionable.

Let us see what application the word "experience" has found in empirio-critical philosophy. The first paragraph of *Kritik der reinen Erfahrung* contains the following "assumption": Any part of our environment stands in a relation to human individuals, such that it appears, as if they would declare of their experience that "this and that I learn by way of experience, this and the other is experience, or follows from experience, or depends upon experience" (p. 1). Thus experience is defined in terms of the same concepts "self" and "environment" while the "doctrine" of their "continuity" is put aside for the time being. Further: "The synthetic concept of pure experience [*i. e.*, experience as such] is a declaration, in whose composition only the parts of environment serve as assumption" (p. 3). If we grant that the environment exists independently of "declarations" and "utterances" of man, then it is possible to interpret experience in a materialist way! "The analytical conception of pure experience, of just such declaration to which nothing was added, which was not in its turn experience and which, consequently, is nothing but experience" (p. 5). In other words,

[5] *Einführung in die Philosophie der reinen Erfahrung*, Vol. II, p. 329.

experience is experience. Yet there are people who take this quasi-erudite prattle for true wisdom!

It is essential to add that Avenarius in the second volume of the *Kritik der reinen Erfahrung* regards "experience" as a "special case" of the psychical; that he divides experience into "thing-values" (*sachhafte Werte*) and "mental-values" (*gedankenhafte Werte*); that "experience in the broad sense" includes the latter; that "complete experience" is identified with essential co-ordination (*Bemerkungen*, etc.). In short, we ask for whatever we wish. "Experience" covers both the materialist and idealist alignments in philosophy, thus sanctifying the confusion between them. Still, though our Machians trustingly accept "pure experience," nevertheless the representatives of these various conflicting tendencies themselves all point to Avenarius' abuse of this concept. "What pure experience is," Riehl writes, "remains undetermined with Avenarius, and his statement that 'pure experience is such experience to which nothing is given which was not in its turn experience,' involves a vicious circle." [6] Pure experience for Avenarius, writes Wundt, may mean now a phantasy, now a statement of the nature of an "object." [7] Avenarius stretches the concept of experience to cover almost everything (p. 382). "On the exact definition of the terms 'experience' and 'pure experience,'" writes Couwelaert, "depends the whole meaning of this philosophy. Avenarius nowhere gives an exact definition." [8] "The vagueness of the term 'experience' stands him in good stead, and so at the end Avenarius falls back on the time-worn argument of subjective idealism," says Norman Smith.[9]

"I solemnly declare that the inner sense, the soul of my philosophy consists in this that a human being possesses nothing save experience; a human being comes to everything only through experience. . . ." What an outspoken philosopher of pure experience he is, indeed! The author of these words is no other than the subjective idealist Fichte.[10] The history of philosophy tells us that the interpretation of what the concept of experience means divided the classical materialists and idealists. At present the professorial philosophy of all shades conceals its reactionary tendencies under a mask of well sounding phrases about "experience." All followers

[6] *Systematische Philosophie*, p. 102.
[7] *Philosophische Studien*, Vol. XIII, pp. 92-93.
[8] *Revue neo-scholastique*, 1907, p. 61.
[9] *Mind*, Vol. XV, p. 29.
[10] *Sonnenklarer Bericht*, etc., p. 15.

of the immanentist school have recourse to experience. In the preface to the second edition of his *Erkenntnis und Irrtum*, Mach praises a book of Professor Jerusalem in which we read: "The acceptance of the divine prime being does not contradict any experience." [11]

We can only be sorry for those people who believe Avenarius, *et al.*,—who believe that by means of the word "experience" we are able to overcome the "obsolete" distinction between materialism and idealism. If Valentinov and Yushkevich accuse Bogdanov, who drew back somewhat from pure Machism, of abusing the word "experience," they betray their ignorance. Bogdanov is "not guilty" on that score; he humbly took over the whole muddle from Mach and Avenarius. When Bogdanov says, "consciousness and immediate psychical experience are identical concepts . . . ," [12] matter is "not experience" but "the unknown which causes the known," [13] he interprets experience in an *idealist* manner. And he is, of course, neither the first [14] nor the last to build toy systems of idealism on the word "experience." When he retorts upon the reactionary philosophers, that the attempts to transcend the boundaries of experience lead only to "empty abstractions and contradictory images, all elements of which have been taken from experience" (Vol. I, p. 48), he opposes the empty abstractions of human consciousness with something which exists outside of man and independently of his consciousness, thereby interpreting experience in a materialist way.

It is the same with Mach who, taking idealism as the starting point (bodies are complexes of sensations or "elements") often becomes confused himself by assuming a materialist interpretation of the word "experience." He says:

"Not to 'philosophise out of ourselves,' but to take our concepts from experience." Here experience is distinguished from "philosophising out of oneself," is interpreted as something objective, given to us from the outside, that is, is interpreted materialistically. Another example:

[11] Jerusalem: *Der kritische Idealismus und die reine Logik*, p. 222.

[12] *Empirio-Monism*, Bk. II, p. 53.

[13] *Empirio-Monism*, Bk. III, p. viii.

[14] In England Belfort Bax has been thus holding forth for a long time. The French reviewer of his book, *The Roots of Reality*, bitingly remarks: "'Since experience is only another word for consciousness,' be then an open idealist!" *Revue de philosophie*, 1907, p. 399.

"Everything which we observe in nature imprints itself *uncomprehended* and *unanalysed* in our precepts and ideas, which, then, in their turn, mimic the processes of nature in their most general and most striking features. In these accumulated experiences we possess a treasure-store which is ever close at hand. . . ." [15]

Nature is here taken as primary, sensation and experience as derivative. Had Mach consistently clung to such a view of the fundamental problems of epistemology, he would have freed humanity from many foolish idealistic "complexes." The third example: "The close connection of thought and experience creates modern science. Experience brings forth thought. It is further elaborated and is again compared with experience." [16] Mach's special "philosophy" is here thrown overboard, and the author instinctively accepts the customary viewpoint of the scientists whose approach to experience is materialistic. The outcome is this: The word "experience" on which the Machian grounds his system has long since served to shield idealistic systems, and now serves Avenarius and the others in their eclectic voyages from the idealist position to the materialist position and back. The various "definitions" of this concept express only those two fundamental divisions in philosophy which Engels so brilliantly characterised.

2. *Plekhanov's Error Concerning the Concept "Experience"*

On pages x and xi of his preface to *L. Feuerbach*, Plekhanov says:

"One German writer remarks that for empirio-criticism, experience is only a subject of investigation, and not a means of knowledge. If this be so, then the distinction between empirio-criticism and materialism becomes devoid of any sense, and the discussion of the question as to whether or not empirio-criticism is called upon to change materialism, seems to be shallow and idle."

This is a complete muddle.

Carstanjen, one of the most "orthodox" followers of Avenarius, says in his article on empirio-criticism (as a reply to Wundt), that for the *Kritik der reinen Erfahrung*, experience is not a means of knowledge, but a subject of investigation.[17] And yet for Plekhanov

[15] *The Science of Mechanics*, Chicago, 1902, p. 28.

[16] *Erkenntnis und Irrtum*, p. 197.

[17] *Vierteljahrsschrift für wissenschaftliche Philosophie*, Jahrg. 22, 1898, p. 45.

the distinction between Carstanjen's views and materialism is devoid of sense!

Carstanjen renders literally the conception of Avenarius, who in his *Bemerkungen* absolutely contrasts his conception of experience as that which is given us, that which we find (*das Vorgefundene*), with the conception of experience as a "means of knowledge" in the "sense of the dominating, essentially metaphysical theories of knowledge" (*loc. cit.*, p. 401).

Petzoldt, following Avenarius in his *Einführung in die Philosophie*, etc., says the same (Vol. I, p. 117). Yet, according to Plekhanov, the distinction between the views of Carstanjen, Avenarius, and Petzoldt on one hand, and that of materialism on the other, is devoid of sense! Either Plekhanov has not read Carstanjen and the others to the end, or he has taken his reference to "one German writer" fifth hand.

What does this statement, uncomprehended by Plekhanov, concerning the views of the most outstanding empirio-criticists mean? Carstanjen wishes to say that Avenarius, in his *Kritik der reinen Erfahrung*, takes experience as the subject of investigation, that is to say, every form of "human expression." Avenarius does not inquire, says Carstanjen (*loc. cit.*, p. 50), whether these expressions are real, or whether they relate to ghosts; he merely arranges, systematises, formally classifies the various forms of human expression, the physical as well as the mental (p. 53), without going into the essence of the question. Carstanjen is absolutely right in characterising this viewpoint as "predominantly sceptical" (p. 213). In this article, by the way, Carstanjen defends his dear teacher from the scandalous (from the point of view of a German professor) accusation of materialism, levelled against him by Wundt. Pray, what sort of materialists are we! Such is the sense of Carstanjen's objections.

If we speak of "experience" we do not speak of it in the usual sense, which leads or could lead to materialism, but in the sense of our investigation of everything that men "express" as experience. Carstanjen and Avenarius consider experience as a means of cognition, as materialistic (this is, perhaps, rather ordinary, but nevertheless untrue, as we have seen from the example of Fichte). Avenarius cuts himself free from the "prevailing metaphysics," which persists in regarding the brain as the organ of thought while ignoring the theories of introjection and co-ordination. Under

the given or found (*das Vorgefundene*), Avenarius understands the continuity of the self and environment, which leads him to a confused idealist interpretation of "experience."

The materialistic as well as the idealistic, Humean and Kantian tendencies may very well be concealed, as we see, under the word "experience"; but neither the definition of experience as the subject of investigation [18] nor its definition as a means of cognition, decides matters definitely. Carstanjen's remarks about Wundt especially have no relation whatsoever to the question of the distinction between empirio-criticism and materialism.

As a curiosity, let us note that Bogdanov and Valentinov, responding to Plekhanov on this point, do not display any more knowledge of the subject. Bogdanov declares: "It is not quite clear; it is the task of empirio-criticists to analyse this formulation of experience and it remains for them to accept or reject its conditions" (Vol. III, p. xi). A very convenient position, indeed! It turns out that he is not a Machian and is not therefore obliged to find out in what sense a certain Avenarius or Carstanjen speaks of experience! Bogdanov desires to make use of Machism (and also of the Machian confusion regarding "experience"), but he does not wish to be responsible for it.

The "pure" empirio-criticist, Valentinov, copied Plekhanov's remark and publicly disclosed the fact, that Plekhanov did not name the writer and did not explain the matter (*loc. cit.*, pp. 108-109). And at the same time he himself did not offer even a word about the essence of the question, although he claims to have read Plekhanov's remark "three times or more." He evidently did not understand anything about it. These Machians!

3. *Causality and Necessity in Nature*

The question of causality is peculiarly important in defining the fundamental philosophic alignment of this or the other latest "ism." We should, therefore, spend a little more time on it. We shall begin with an exposition of the views of the materialist theory of knowledge on this particular point. The views of Feuerbach are

[18] Plekhanov perhaps thought that Carstanjen had said, "an object of knowledge, independent of knowledge," and not an "object of investigation"? This would indeed be materialism. But neither Carstanjen, nor anybody else connected with empirio-criticism, said or would say any such thing.

expounded with exceptional clarity in his above mentioned answer to R. Haym.

"For Feuerbach 'nature and human reason,' says Haym, 'differ completely, and between them there opens an abyss which it is impossible to span either from one side or from the other.' Haym grounds this reproach on § 48 of *The Essence of Religion,* where it is said that 'nature may be conceived only through nature itself, that its necessity is neither human nor logical, neither metaphysical nor mathematical, that nature alone is a kind of being to which it is impossible to apply any human measure. Although we do compare its phenomena with similar human phenomena, we apply this measure, in order to make the human expression and conception themselves conceivable to us. For instance, we are compelled to apply such expressions, as "order, purpose, law" because of our language.' What does it mean? Do I mean to say by this that in nature there is no order, to say, for example, that after autumn summer may follow, after spring, winter, after winter, autumn? Do I mean to say that there is no purpose in nature, to say that between the lungs and air, for example, or between light and the eye, between sound and the ear there is no concordance? Do I mean to say that there is no order in nature, to say that the earth may move now in an ellipse, now in a circle, and move around the sun, at one period in a year, at another—in a quarter of an hour? What an absurdity! What then did I intend to say in this passage? Nothing more than to make a distinction between that which belongs to nature and that which belongs to man; in this passage I do not say that there is nothing actually corresponding in nature to our words and conceptions of order, purpose, and law. Only the identity of thought and being is denied; only the notion that order, etc., exists exactly in nature as in the head or heart of man. Order, purpose, law are no more than words, by which man translates the actions of nature into his language, in order that he may understand them. These words are not devoid of sense or of objective content, nevertheless, it is necessary to distinguish the original from the translation. Order, purpose, law express in the human sense something arbitrary.

"From the contingency of natural order, from the inherency of purpose and law in nature, theism directly infers their arbitrary origin,—infers the existence of a being different from nature and one which brings order, purpose and law into a nature which is it-

self chaotic and without any determination. The 'reason' of the theists . . . is a reason which is contradictory to nature, absolutely devoid of an understanding of the substance of nature. The reason of the theists breaks nature into two beings—one, material; the other, formal or spiritual."[19]

As we see, Feuerbach recognises the objectivity of natural law, of causality, reflected only approximately by human conceptions of order, law and so forth. The recognition of the objectivity of natural law is with Feuerbach, inseparably connected with the recognition of the objective reality of the outer world of objects, bodies, things, reflected by our mind. The views of Feuerbach are consistently materialistic. All other views, or rather, all the other philosophical conceptions of causality, which deny the objectivity of law, causality, and necessity in nature, Feuerbach justly regards as a tendency to fideism. For it is clear indeed that the subjective interpretations according to which natural causality, uniformity and necessity are inferred, not from the outer objective world, but from mind, reason, and logic, not only separates human reason from nature, not only opposes the first with the second, but makes nature a part of reason, instead of making reason a small part of nature. The subjectivist interpretation of causality is philosophical idealism (varieties of which are the theories of causality of Hume and Kant), which is more or less diluted fideism. The recognition of the fact of natural order and the approximate reflection of that order in the mind of man is materialism.

Engels, on the question of causality, did not contrast his materialist view with other tendencies. He had no need to do this since on the fundamental question of the objectivity of nature he very definitely separated himself from all agnostics. But whoever reads his philosophic works with attention must clearly see that Engels does not admit a shadow of a doubt about the objective existence of law, order, causality and necessity in nature. We shall confine ourselves to a few examples. In the first paragraph of *Anti-Dühring* Engels says: "In order to study these individual phenomena we are obliged to take them out of their natural or social connection, and examine each of them by itself according to its own form and its particular origin and development" (p. 41). That this natural connection, a connection between natural phenomena, exists objectively, is obvi-

[19] *Werke*, 1903, Vol. VII, pp. 519-520.

ous. Engels emphasises especially the dialectic view of cause and effect:

"Cause and effect are concepts which can only realise themselves in relation to a particular case. However, when we come to examine the separate case in its general relation to the world at large they come together and dissolve themselves in face of the working out of the universal problem, for, here, cause and effect exchange places; what was at one time and place effect, becomes cause and vice versa" (p. 43). Hence the human conception of cause and effect always somewhat simplifies the objective connection of phenomena of nature reflecting it only approximately, artificially isolating one side or the other of the same world process. If we find that the laws of reason correspond to the laws of nature, says Engels, then this becomes quite conceivable; that is, if we take into account that reason and consciousness are "products of the human brain and man himself is the product of nature." Of course, the products of the human brain, in the last analysis, being themselves products of nature, do not contradict other natural relations, but correspond with them. There is no doubt that there exists a natural, objective relation between phenomena of the world. Engels always speaks of the "laws of nature," of the "necessity of nature," without finding it necessary to explain the generally known position of materialism.

In *Feuerbach* we also read that "the universal laws of motion—of the outer world as well as of the thought of man—are two sets of laws which are identical as far as matter is concerned but which differ as regards expression, in so far as the mind of man can employ them consciously, while, in nature and, up to now, in human history, for the most part they accomplish themselves, unconsciously in the form of external necessity, through an endless succession of apparent accidents" (pp. 95-96). And Engels accuses natural philosophy of changing "the unknown yet actual connections" (phenomena of nature) into "ideal and phantastic connections." The recognition of the objective character of the laws of nature, of casuality and of necessity is very clear in Engels', as in the emphasis on the relative character of our own, that is human, approximate reflection of the facts of law expressed in these and other conceptions.

Passing to Dietzgen, we must first of all note one of the numerous perversions of the question on the part of our Machians. One of

the authors of *Outlines*, Mr. Helfond, tells us: "The chief point of Dietzgen's doctrine may be summarised in the following propositions: 'The causal dependence which we ascribe to things in reality are not contained in the things themselves'" (p. 248). This is all nonsense on the part of Mr. Helfond, whose own views are a mixture of materialism and agnosticism. He has falsified Dietzgen's meaning. Of course, we can find plenty of confusion and errors in Dietzgen, which gladden the hearts of the Machians and which make all materialists regard Dietzgen as an inconsistent philosopher. Yet to attribute the direct denial of the materialist view of causality to him—only Helfond and the Russian Machians are capable of doing such a thing.

"Objective science," says Dietzgen in his *Positive Outcome of Philosophy*, "differs from it (the subjective understanding) in that such a science penetrates to the causes of its objects not by faith or introspective speculation, but by experience and induction, not *a priori*, but *a posteriori*. Natural science looks for causes not outside or back of nature's phenomena, but within or by means of them" (p. 109). "Causes are, in the last instance, not noticed and furnished by means of sight, hearing, feeling, not by means of the sense perceptions. They are rather supplied by the faculty of thought, but are produced by it in connection with sense perceptions and their material objects. This raw material gives the objective existence to the causes produced by the mind. Just as we demand that a truth should be the truth about some objective phenomenon, so we also demand that a cause should be real, that it should be the cause of some objective effect" (p. 113). The "cause of the thing is its relation" (p. 114).

From this it is obvious that Mr. Helfond made a false statement. The doctrine of materialism expounded by Dietzgen recognises that "the causal nexus" is contained in the "things themselves." For the proper Machian mixture it was necessary that Mr. Helfond confuse the materialist and the idealist positions on the nature of causality. Let us proceed with an analysis of this latter position.

We find a clear declaration of the starting point of Avenarius' philosophy concerning this question in his first work, *Philosophie*, etc. In § 81 we read: "Without perceiving (without knowing in experience) force as causing motion, we do not perceive the necessity of any motion. . . . All we do perceive is that which follows one after the other." We have before us the Humean standpoint in its

clearest aspect: sensation, experience does not tell us anything about necessity. A philosopher who asserts (on the principle of "the economy of thought") that only sensation exists can not come to any other conclusion. "Inasmuch as the conception of causality demands force and necessity or constraint, as integral parts for defining the effect, to this extent they fall together. . . (§ 82). Necessity remains as the degree of probability of expectation of the effects" (§ 83). This is quite definitely a subjective interpretation of causality. And to remain consistent to some extent, it is impossible to come to any other conclusion without recognising objective reality as the source of our sensations.

Taking Mach, we find this in a special chapter on "Causality and Explanation."[20] "The Humean critique (conception of causality) remains in force." Kant and Hume solve the problems of causality differently (Mach does not take other philosophers into consideration!), "we prefer" Hume's solution. "Besides logical necessity, there is no other necessity, no physical necessity, for example." This is exactly the point of view which was so unflinchingly combated by Feuerbach. Mach does not even dream of denying his kinship with Hume. Only the Russian Machians could bring themselves to the point of proclaiming a "connection" between the agnosticism of Hume and the materialism of Marx and Engels. In *Die Mechanik*, etc., we read: "In nature there is neither cause nor effect (p. 474). I have said many a time that all forms of the law of causality follow from subjective endeavours; there is no necessity for nature to correspond to them" (p. 495).

We must note here that with remarkable naïveté our Russian Machians change the question from the fundamental difference between the materialist and idealist arguments concerning causality, to the question of this or that formulation of the law. They follow the German empirio-critical professors, in believing that to say "functional correlation," the discovery of "recent positivism," is to free us from the "fetishism" of such expressions as "necessity," "law" and the like. Of course, this is absurd, and Wundt had a perfect right to ridicule such change of words (*Philosophische Studien*, pp. 383, 388) which does not change things in the least. Mach himself speaks of "all forms" of the law of causality, and in *Erkenntnis und Irrtum* (p. 278), utters the self-evident statement that the conception of function can express the "dependence of ele-

[20] *Die Prinzipien der Wärmelehre*, 2d ed., 1900, pp. 432-439.

ments" with more exactness only when the possibility is reached of expressing the results of investigation in the measurable quantities. Even in a science like chemistry, this is attained only in part. In the opinion of our Machians, confident in the discoveries of the professors, Feuerbach—not to speak of Engels—did not know that the concepts, "order," "law, etc.," can be expressed under certain conditions as a mathematically definite functional correlation!

The really important epistemologic question which divides the philosophic schools is not concerning the degree of exactness of our description of causal connections attained nor whether these descriptions can be expressed in exact mathematical formulæ, but whether the source of our cognition of these connections is natural objective law, or the properties of our reason, its innate faculties of knowing certain *a priori* truths, and so forth. This is what divides the materialists, Feuerbach, Marx and Engels, from the agnostics—Humeans—Avenarius and Mach. In some parts of his works, Mach, whom it would be sinful to accuse of consistency, often "forgets" about his agreement with Hume and his subjective theory of causality, and argues "simply" as a scientist, from an instinctively materialist viewpoint. For instance, in his *Die Mechanik*, etc. (French tr.), we read: "Nature teaches us to find uniformity in its phenomena" (p. 182). But if we find uniformity in natural phenomena, does it mean that uniformity exists objectively outside our mind? He answers the question in the negative. On the question of the uniformity of nature Mach speaks thus: "The power that prompts us to complement facts, observed only partially by thought, is the power of association. It is enforced by repetition. It then seems to us a power which does not depend merely upon our volition and upon individual facts, but a power which directs thoughts *and* facts, which keeps them in correspondence with each other as a law of their connection. That we consider ourselves capable of making predictions by the help of such laws only proves [!] the presence of sufficient uniformity in our environment but not at all the necessity of success of our predictions." (*Wärmelehre*, p. 383.)

This means that we may and ought to look for necessity somewhere else than in the uniformity of our environment, or of nature! Where to look for uniformity is the secret of the idealist philosophy which is afraid to recognise that the cognitive capacity of man can reflect the uniformity of nature. In *Erkenntnis und Irrtum*, Mach

even defines a law of nature as a "limitation of expectancy" (Second Edition, p. 450 *ff*). Solipsism comes into its own after all.

Let us examine the position of other writers of the same philosophical school. Karl Pearson expresses himself with characteristic precision:

"The laws of science are products of the human mind rather than factors of the external world. Those, whether poets or materialists, who do homage to nature as the sovereign of man, too often forget that the order and complexity they admire are at least as much a product of man's perceptive and reasoning faculties as are their own memories and thoughts. . . . The complexity of nature is conditioned by our perceptive faculty; the comprehensive character of natural law is due to the ingenuity of the human mind. Here, in the human powers of perception and reason, lie the mystery and the grandeur of nature and its laws. . . . Man is the creator of the law of nature. . . . There is more meaning in the statement that man gives laws to nature than in its converse that nature gives laws to man. . . . In this sense of the word, a sense unfortunately far too common to-day, natural law could exist before it was recognised by men." [21]

The fourth chapter, which is devoted to the question of causality (§ 11), contains the following: "The necessity lies in the world of conception, and is only unconsciously and illogically transferred to the world of perception." It is noteworthy that for Pearson perceptions or sense-impressions are the reality existing outside of us. "In the uniformity with which sequences of perceptions are repeated (the routine of perceptions) there is also no inherent necessity, but it is a necessary condition for the existence of thinking beings that there should be a routine in the perceptions. The necessity thus lies in the nature of the thinking being and not in the perceptions themselves; thus it is conceivably a product of the perceptive faculty" (p. 139).

Our Machian, with whom Mach "himself" expresses his solidarity, thus arrives safely at purely Kantian idealism. Man dictates laws to nature and not vice versa! It is not important to repeat after Kant the doctrine of apriorism—which does not define the idealist tendency as such, but only a special formulation of it—but it is important that reason, mind, consciousness is here primary, and nature secondary. Reason is not only a large part of nature, not

[21] *The Grammar of Science*, pp. 86, 87.

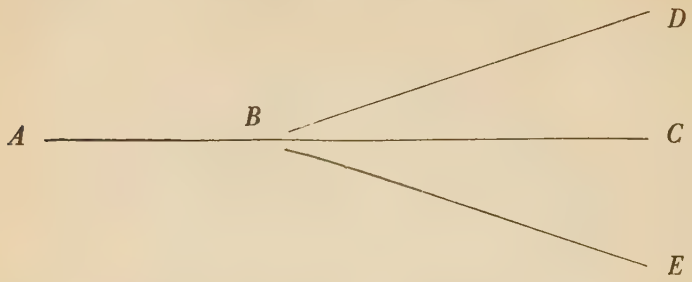
only one of its highest products, the reflection of its processes, but more—nature is part of a "reason" which stretches itself from ordinary, simple human reason known to all of us, into "stupendous" (as Dietzgen says), mysterious, divine reason. The Kantian-Machian formula, that "man gives nature its laws," is a formula of fideism. If our Machians stare wide-eyed when Engels says that the fundamental characteristic of materialism is the acceptance of nature and not spirit as the *prius*, it shows only to what extent they are incapable of distinguishing real and fundamental philosophic tendencies from professorial erudition and "wise" words.

Petzoldt, who analysed and developed Avenarius in his two-volumed work may serve as a good example of reactionary scholasticism. "Until now," says he, "one hundred and fifty years after Hume, substance and causality still paralyse the daring of reason." [22] Of course, most daring are the solipsists who discover sensation without organic matter, thought without brain, nature without objective law! "And the formulation of causality, necessity, or the necessity in nature, contains something unclear and mystical"—the idea of "fetishism" and "anthropomorphism" (pp. 32, 34). Ah! the poor mystics—Feuerbach, Marx and Engels! All the time they have been speaking of necessity in nature and have even called the adherents of Hume's trend of thought, theoretical reactionaries! Petzoldt is superior to all "anthropomorphism." He has discovered the great law of "unique determination" which eliminates every obscurity, every trace of "fetishism"; for example, the parallelogram of forces (p. 35). This cannot be "proven"; it must be recognised as a "fact of experience." It cannot be assumed in advance that a body to which equal force has been imparted from different sides will move. "We cannot admit such indetermination and chaos in nature; we must demand from it exactness and law." Well, well! From nature we demand conformity to law! The bourgeoisie demands a reactionary outlook from its professors. "Our reason demands precision from nature and nature always conforms to this demand; we shall even see that in a certain sense it is compelled to conform to it" (p. 36).

Why, at an impulsion in the direction of A B, does the body move toward C and not toward D or E, etc.? "Why does nature not choose one of the countless other directions?" (p. 37). Because

[22] *Einführung in die Philosophie der reinen Erfahrung*, Vol. I, p. 31.

then there would be no "unique determination," and the great empirical discovery by Joseph Petzoldt demands it.



Such is the trash with which the empirio-criticists fill scores of pages! ". . . We have remarked more than once that our position draws its strength not from the sum-total of separate experiments, but rather on the contrary, from our demand on nature that it hold recognition (*seine Geltung*). Indeed, even before it became law it had already become for us a principle with which to approach reality, in other words, a postulate. It had power, so to speak, *a priori*, independent of every separate experiment. At first, it was not proper to the philosophy of pure experience to preach *a priori* truths, thus apparently returning to the most barren metaphysics. But our apriorism is only logical and psychological, and not metaphysical" (p. 40). Of course, if we call apriorism logical, then the reactionary flavor of the idea disappears and it is elevated to the most "modern positivism"!

There cannot be any unique determination in psychical phenomena, Petzoldt teaches us; the rôle of imagination, the significance of great inventions, etc., create exceptions, and the law of nature or the law of spirit does not tolerate "any exceptions" (p. 65). Here we have before us a pure metaphysician—one who has not even the slightest conception of the relative difference between the contingent and the necessary.

We are then referred to the motivation of historical events or to the development of character in poetical works. "If we will pay attention we shall see the absence of unique determination. There is not one historical event and not one drama in which we could not imagine the participants acting differently than they do under given psychical conditions" (p. 73). "Unique determination in the psychical domain is not only absent, but we also have a right to *de-*

mand its absence from reality. Our teaching is thus raised to the rank of a postulate . . . that is the necessary condition of any preceding experience, *logical apriorism*" (Petzoldt's italics, p. 76).

Petzoldt continues to operate with this logical apriorism in both volumes of his *Einführung*, etc., and in the booklet issued in 1906.[23] This is the second example of a noted empirio-criticist, who imperceptibly slips into Kantianism and preaches the most reactionary doctrine under a somewhat altered appearance. And this fact is not at all fortuitous, for in the very foundation of the teachings of Mach and Avenarius on causality, there is hidden an idealist fraud in spite of high-sounding phrases about "positivism" in which it is wrapped up. The difference between the Humean and the Kantian theories of causality is a secondary distinction amongst the agnostics, who agree on the denial of the objectivity of natural law—thus condemning themselves inevitably to further idealist consequences. Rudolph Willy, a more "conscientious" empirio-criticist than Petzoldt, who is ashamed of his kinship to the immanentists, rejects, for example, the whole theory of "unique determination" as an expression of nothing more than "logical formalism." But does Willy improve his position by renouncing Petzoldt? Not at all, for he renounces Kantian agnosticism in the interest of Humean agnosticism. "We have known," he writes, "since the time of Hume, that 'necessity' is a purely logical characteristic (*Merkmal*) not a transcendental, or as I would rather say, and have already said, a purely verbal characteristic." (R. Willy: *Gegen die Schulweisheit*, 1905, p. 91; *cf.* pp. 173, 175.)

The agnostic calls our materialist view of necessity "transcendental," for from the point of view of Kantian and Humean "school wisdom," which Willy does not reject, but only purifies, every recognition of objective reality which is given us in experience is an illegal "transcendence." We find one of the French writers of the philosophical tendency which we are analysing, Henri Poincaré, constantly straying on the same path of agnosticism. He is a great physicist but a poor philosopher, whose errors Yushkevich proclaimed, of course, as the last word of recent positivism. This was carried so far that another "ism" arose—"empirio-symbolism." For Poincaré (of whose views we shall speak in the chapter on

[23] J. Petzoldt: *Das Weltproblem vom positivistischen Standpunkte aus*, Leipzig, 1905, p. 130: "And from the empirical standpoint there can be a logical apriority; causality is logical apriority applied to what is constantly experienced in our environment."

"New Physics"), the laws of nature are symbols, conditioning limits which man creates for the sake of "convenience." "The only true objective reality is the inner harmony of the world," while by "objective," Poincaré means that which is uniquely determined by the majority of men or by all.[24] That is to say, he destroys objective truth, as all the Machians do, through a purely subjective interpretation of law. On the question of whether or not there is "harmony" outside us, he categorically declares "undoubtedly no." It is perfectly obvious, therefore, that the new terms do not in the least change the traditional philosophic alignment of agnosticism, for the essence of Poincaré's "original" theory reduces itself to the denial (though he is by no means consistent) of objective reality and the objectivity of natural law. It is, therefore, perfectly natural as distinct from the Russian Machians who accept new formulations of old errors for new discoveries, that the German Kantians greeted such notions as an expression of a fundamental philosophic reversal to their own views.—*i. e.*, to agnosticism. "The French mathematician Henri Poincaré, "so we read in the work of the Kantian Philip Frank, "defends the doctrine that many of the most general postulates of science (the law of conservation of energy, etc.), of which it is so often difficult to say whether they are of empirical or of *a priori* origin, in fact belong neither to one nor the other, but are purely conditional postulates dependent upon the human factor. . . . Thus the Kantian rejoices that the new *Naturphilosophie* unexpectedly renews the fundamental thought of critical idealism, namely, that experience merely fills in the frame which man brings with him into the world. . . ." (*Annalen der Naturphilosophie*, 1907, Vol. VI, pp. 443, 447.)

We give this example to show the reader the degree of naïveté which characterises our Yushkeviches who take a certain theory of symbolism for the pure coin of novelty, when even superficially informed philosophers admit plainly and directly that those who have followed Poincaré have gone over to the standpoint of critical idealism! For the substance of this point of view does not necessarily lie in the repetition of the specific expressions of Kant, but in the recognition of the fundamental idea, common to both Hume and Kant—the denial of the objectivity of natural law and the deduction of various "conditions of experience," principles, postulates and hypotheses from the subject and not from nature. Engels was

[24] Henri Poincaré, *The Value of Science*, New York, 1907, pp. 13, 14.

right when he said that it is not important to which one of the numerous schools of idealism or materialism a philosopher belongs, but rather whether nature, the outer world, moving matter be taken as the *prius, or* spirit, reason, mind.

Another peculiar characteristic of Machism on this question, in contrast to the other philosophic standpoints, is given by the learned Kantian Lucka.[25] On the question of causality, "Mach agrees with Hume. . . . P. Volkmann infers the necessity of thinking from the necessity of the processes of nature—a standpoint that recognises in contradistinction to Mach and in agreement with Kant the necessity, not in thinking, but in the processes of nature" (p. 424).

Volkmann, a physicist who wrote much on epistemological questions, tends to materialism, as do the great majority of the natural scientists, but to a materialism which is inconsistent, shamefaced and obscure. To recognise necessity in nature and to derive therefrom the necessity of thought, is materialism. To infer necessity, causality, law, etc., from reason, is idealism. The only inaccuracy in the citation adduced is the attribution to Mach of the complete denial of any necessity. We have already learned that this is not the case either for Mach, or for the whole empirio-critical school which, having once left materialism, inevitably succumbs to idealism.

It remains for us to say a few words especially about the Russian Machians. They desire to be Marxians; they have all "read" Engels' definite separation of materialism from the philosophy of Hume; they could not have failed to learn, either from Mach or anybody else acquainted with his philosophy, that both Mach and Avenarius follow the Humean lead; and all try to avoid mentioning Humism and materialism in discussing the question of causality! Utter confusion holds sway here. We shall give several examples. Mr. Yushkevich preaches a "new" empirio-symbolism. The "sensations of blue, hard, etc.—these so-called data of pure experience" together with the "creations of pure reason such as a chimera or chess play"—all this is "empirio-symbolism" (*Outlines,* p. 179). "Cognition is empirio-symbolic, and developing, it gives empirio-symbols of a greater degree of symbolisation. . . . These empirio-symbols are . . . the so-called laws of nature. . . . The so-called true reality, existence in itself, is that infinite [a very learned man is

[25] E. Lucka: "Das Erkenntnissproblem und Machs Analyse der Empfindungen," in *Kantstudien,* Vol. VII, p. 409.

this Mr. Yushkevich] limit of the system of symbols to which all our knowledge is striving" (p. 188). "The stream of experience . . . which lies at the foundation of our knowledge is . . . irrational . . . illogical . . ." (pp. 187, 194). Energy is "just as little a thing or substance as time, space, mass and the other fundamental conceptions of natural science; energy is a constant, an 'empirio-symbol,' that gratifies for a time, like other empirio-symbols, the great human need in introducing reason, and Logos, into the irrational stream of what is experienced" (p. 209).

We behold a subjective idealist in the costume of a clown, which has been made up of loud and variegated bits of fashionable terminology,—for whom the external world-nature and its laws—are symbols of our mind. The stream of experience is devoid of reason, order and law; it is our reason that introduces order. The celestial bodies are symbols of human cognition, and so is the earth. If science teaches us that the earth existed long before man and organic matter evolved, this is nothing but an invention! The order of the motion of the planets is a product of our knowledge. And feeling that human reason is being transformed by such philosophy into the very author and creator of nature, Mr. Yushkevich puts Logos on the same plane with reason; Logos, that is reason in abstract, not reason, but Reason, not the function of the human brain, but something existing prior to the emergence of the brain, something divine. The last word of "recent positivism" is the old formulation of fideism which was revealed by Feuerbach.

Let us take Bogdanov. In 1899, when he was still partly a materialist and had only begun to stray, under the influence of a very great chemist and very confused philosopher—Wilhelm Ostwald—he wrote: "The general law of the causal relation of phenomena is the last and best product of human cognition; it is the universal law, the highest of those laws which, to express it in the words of a philosopher, human reason attributes to nature." [26]

God knows from what sources Bogdanov took this reference; but the fact is that the "expression" of a philosopher, which is repeated in good faith by a "Marxist," belongs to Kant. What an unpleasant occurrence! It is even more unpleasant that it cannot be explained even by the "mere" influence of Ostwald.

In 1904, having already abandoned both naturo-historical materialism and Ostwald, Bogdanov wrote: " . . . Modern positivism

[26] *Fundamental Elements*, etc., p. 41.

regards the law of causality only as a means of connecting phenomena into an uninterrupted series, solely through forms of co-ordinated experiences." [27] Bogdanov either did not know or would not admit that this modern positivism is agnosticism which denies the objective necessity of nature that existed before the emergence of "knowledge" and man. He took what is called "modern positivism" from the German professors on faith. And finally, in 1905, having gone through all the previous stages, the stage of empirio-criticism as well, and already well-advanced in the stage of "empirio-monism," Bogdanov wrote: "Laws do not at all belong to the domain of experience . . . they are not given in it, but are created by reason as a means of organising experience, in order to fuse it harmoniously into a complete whole." [28] "Laws are abstractions of knowledge; and physical laws possess physical properties just as little as psychological laws possess psychical properties" (*ibid*).

That is, the law that winter follows autumn, is not given us in experience, but is created by reason as a means of organisation, harmony and connection. How is this done, Comrade Bogdanov?

"Empirio-Monism is possible only because knowledge harmonises experience, eliminating infinite contradictions, creating universal organising forms, changing the primeval chaotic world of elements into a derivative orderly world of relations" (p. 57). This is not true. The idea, that knowledge can "create" forms and change the primeval chaos into order, is an idealist notion. The world is a uniform world of matter in motion, and our cognition, being the highest product of nature, is in a position only to reflect this law.

The outcome is that our Machians, blindly following the "modern" professors, either repeat the mistakes of Kantian and Humean agnosticism on the problem of causality, without noticing its absolute contradiction with Marxism, that is materialism, or they roll down an inclined plane toward idealism.

4. *The "Principle of Economy of Thought" and the Question of "World Unity"*

"The principle of least resistance," which was made the basis of the theory of knowledge by Mach, Avenarius and others, un-

[27] From *The Psychology of Society* (in Russian), p. 207.
[28] *Empirio-Monism*, Bk. I, p. 40.

doubtedly represents the Marxian "tendency in epistemology." So Bazarov declares on page 69 of *Outlines*.

There is "economy" in Marx; there is "economy" in Mach. Is it true that there is even a shadow of resemblance between them, and "without doubt" at that?

Avenarius' *Philosophie*, etc., applies this principle, as we have seen, in such a way that in the name of "economy of thought" only sensation is declared to exist. Causality and "substance" (a word which the professors like to employ for the sake of "importance," instead of the clearer and more exact word "matter") are "eliminated" in the name of the same economy; that is, we get sensation without matter, and thought without brain. This absurdity is really an attempt to serve subjective idealism with a new dressing. In philosophical literature the subjective character of this fundamental work, especially as regards the question of the famous "economy of thought," has generally been recognised. That our Machians did not notice the subjective idealism under the "new" banner, is a choice item in the world of curiosities.

Mach, in the *Analysis of Sensations*, refers to his work of 1872 regarding this question. And this latter work, as we have seen, contains the characteristic doctrines of pure subjectivism, which reduces the world to sensations. Thus the two fundamental works which introduce this famous "principle" into philosophy, represent idealism. Now, what is the question at issue? It is this. The principle of economy of thought, if made a basis of the theory of knowledge, cannot lead to anything else than idealism. That it is more "economical" to "think," that only I and my sensations exist —is beyond dispute, once we have introduced such an absurd principle into epistemology.

Is it "more economical" to "think" of the atom as indivisible or as composed of positive and negative electrons? Is it "more economical" to think of the Russian bourgeois revolution as having been conducted by the liberals or against them? It is sufficient only to put the question, in order to see the absurdity of subjectivism in applying the category of "the economy of thought." Humean thought is "economical" only when it correctly reflects the objective truth. Practice, experiment and industry will serve as the criterion of this correctness. Only by denying objective reality, that is, by denying the foundations of Marxism, can one seriously speak of the economy of thought in the theory of knowledge.

Consulting the latest works of Mach, we shall see an interpretation of the famous principle which is at the same time its complete denial. For instance, in the *Die Prinzipien der Wärmelehre*, Mach returns to his favourite idea of "economy of nature" (p. 366). And there he adds that we take care of our economy not for the sake of the economy (pp. 366, 391) but that "the purpose of scientific economy is a fuller and more quiescent . . . picture of the world" (p. 366). If this is the case, then the "principle of thought," as far as the very heart of the question is concerned, is banished not only from the very foundation of epistemology but from the domain of epistemology in general. To say that the purpose of science is to give a true picture of the world (quiescence is beside the point here), is to repeat the materialist position. To say this is to recognise the objective reality of the world in relation to our knowledge, the objective reality of the model in relation to its picture. In characterising such a relation, "economy of thought" is merely a clumsy and pretentious phrase for the word "correctness." Mach is confused here as usual, and the Machians behold this confusion enraptured! In *Erkenntnis und Irrtum* we read the following in the chapter "Illustrations of the Methods of Investigation": "The definition of science as the simplest and completest description given by Kirchhoff (in 1874), the economical representation of the factual (given by Mach in 1872), 'the concordance of thinking and being, and the concordance of the processes of thought with one another' (given by Grassmann in 1844)—all these express with some variations one and the same thought."

Is this not an example of confusion? The principle of the "economy of thought," from which Mach, in 1872, inferred the existence of sensations alone (a viewpoint which he himself had to acknowledge as idealistic), *is compared* with the purely materialist expression of the mathematician Grassmann that there is a necessary correspondence between thought and things—is actually compared with Kirchhoff's definition of science as concise *description* (of an *objective reality* in whose existence Kirchhoff himself does not doubt)!

Such an application of the principle of "economy of thought" is merely an instance of Mach's peculiar philosophic peregrinations. And if all the peculiarities and lapses are eliminated, then the idealist character of the "economy of thought" becomes unques-

tionable. For example, the Kantian Hönigswald, in discussing the philosophy of Mach, greets his "principle of economy" as an approach to the "Kantian world of thought." [29] In truth, if we do not recognise objective reality, and hold that it is given to us in sensations, then from where would the "principle of economy of thought be derived, if not from the subject"? Sensations, to be sure, do not contain any "economy" in themselves. Therefore, sensations give us something which they themselves do not contain! This means that the "principle of economy" is not taken from experience (sensation), but precedes all experience and, like a category of Kant, constitutes its logical condition. Hönigswald quotes the following from *Analysis of Sensations*: "From the facts of our bodily and spiritual stability we can infer the stability and the uniqueness of the processes of nature as regards both determination and direction" (p. 352). Indeed, the subjective-idealistic character of such a position, as well as the kinship of Mach to Petzoldt, who has gone so far as to admit apriorism, is beyond any shadow of doubt.

The idealist Wundt, with an eye on "the principle of the economy of thought," characterised Mach as "Kant turned inside out." [30] With Kant it is the *a priori* and experience, with Mach it is experience and the *a priori*, for the principle of the economy of thought is with Mach essentially apriorism (p. 130). The principle of connection is either between things, as the "objective law of nature [and this Mach decidedly rejects], or it is the subjective principle of description" (p. 130). The principle of economy with Mach is subjective and "*kommt wie aus der Pistole geschossen*"—into this world, God knows from where—as a teleological principle which may have a diversity of meanings (p. 131). Those who are expert in philosophic terminology, as you see, are not as gullible as our Machians, who are ready to take any one at his word who assures them that the "new" term eliminates the opposition between subjectivism and objectivism, between idealism and materialism.

And finally we shall refer to the English philosopher, James Ward, who without any pretence calls himself a spiritualistic monist. He does not dispute with Mach, but on the contrary, utilises the whole Machian tendency in physics for his struggle with material-

[29] *Zur Kritik der Machschen Philosophie*, Berlin, 1903, p. 27.
[30] *Systematische Philosophie*, Leipzig, 1907, p. 128.

ism. And he definitely declares that in Mach "the criterion of simplicity is mainly subjective and not objective." [31]

That the principle of the economy of thought, as the basis of epistemology, pleased the German Kantians and English spiritualists, will not seem strange after the above-said. That people, desirous of being Marxists should link together the political economy of the materialist Marx with the epistemological economy of Mach is simply comical.

It would not be out of place here to say a few words about "world unity." Mr. Yushkevich exemplifies very clearly—for the thousandth time perhaps—the abysmal blunder which our Machians commit in discussing this question. Engels, in his *Anti-Dühring*, thus replies to Dühring who had deduced the unity of the world from the unity of reason: "The real unity of the world consists in its materiality, and this is established, not by a pair of juggling phrases, but by a long and difficult development of philosophy and science" (p. 66). Mr. Yushkevich cites this and retorts: "First of all it is not clear what is meant by the assertion that the unity of the world consists in its being material."

Is it not lovely? This person publicly prattles about the philosophy of Marxism, and then declares that the most elementary propositions of materialism are "not clear" to him! Engels, in the example from Dühring, showed that a somewhat consistent philosophy can infer the unity of the world either from reason—in which case it is helpless before spiritualism and theism and inevitably leads to phrase-juggling—or from the objective reality, which exists outside of us, is studied by the natural sciences and which in the theory of knowledge has long gone under the name of matter. To speak seriously to a person to whom such a thing is "not clear," is useless, for Yushkevich himself is "not clear" with the deliberate intention of slyly evading the clear materialist position of Engels. He repeats Dühring's babble about "the cardinal postulate of the principle of unique determination and its relationship to being," [32] about postulates of which "it would not be correct to say that they are inferred from experience, since scientific experience is only possible due to the fact that the postulates themselves are the basis of investigation" (*ibid*). This is nothing but confusion, for if this person had the slightest esteem for the printed

[31] *Naturalism and Agnosticism*, 3d ed., p. 82.
[32] Yushkevich: *loc. cit.*, Vol. I, p. 51.

word he would detect the *idealist* character in general, and the Kantian character in particular of the idea that there can be postulates which are not taken from experience and without which experience is impossible. A jumble of words taken from various books and strung together with the glaring errors of the materialist Dietzgen—that is the "philosophy" of Mr. Yushkevich and others of his ilk.

Let us examine the arguments on the unity of the world, as expounded by our serious empirio-criticist, Joseph Petzoldt. Paragraph 29, Vol. II, of his *Einführung*, is termed: "The Tendency to Uniformity in the Domain of Epistemology. The Postulate of the Unique Determination of Everything that Occurs." And here are some samples of his arguments: " . . . Only in *unity* is that natural end reached, further than which no reflection can go and in which reason, if it takes into consideration all the facts of the given domain, can reach quiescence . . . (p. 79). It is beyond doubt that nature does not altogether correspond to the demand for unity, but it is also beyond doubt that in many cases, as our investigations show, it does satisfy the demand for quiescence and we must suppose that, in all probability, nature will satisfy this demand in the future, too. Therefore it will be more correct to characterise the mental state as a tendency toward a state of stability than as a tendency toward unity. . . . The principle of the state of stability goes farther and deeper. . . . Haeckel's proposition to put the kingdom of the protista alongside of the vegetable and animal kingdom, is inadequate, for it creates two new difficulties in place of the previous one: formerly the boundary between the vegetables and animals was doubtful; now it becomes also impossible to distinguish the protista from vegetables and animals. . . . Evidently such a situation is not final. Such an ambiguity of concepts must in one way or another be eliminated through the agreement of specialists and by the decision of a majority of votes, even if there are no other means" (p. 81).

Have we not had enough of it? It is evident that the empirio-criticist Petzoldt is by no means better than Dühring. But we must be just even to an opponent. Petzoldt has sufficient scientific integrity to reject materialism unflinchingly in all of his works. He does not humiliate himself to the extent of simulating materialism and declaring the most elementary distinction between the fundamental philosophic tendencies "unclear."

5. *Space and Time*

Having recognised the existence of objective reality, that is, of moving matter, independently of our mind, materialism must also inevitably recognise the objective reality of space and time,—distinct, first of all, from Kantianism which, in this question, takes sides with idealism, and regards time and space, not as objective realities, but as forms of human understanding. The radical difference between the two fundamental philosophic doctrines on this question is recognised very clearly by the writers of various tendencies, even by those who are only partially consistent thinkers. Let us begin with the materialists.

"Space and time," says Feuerbach, "are not simple forms of phenomena but essential conditions [*Wesenbedingungen*] . . . of existence." [33] Regarding the world which we perceive by means of sensations as objective reality, Feuerbach naturally also rejects the phenomenalist (as Mach would dub it) or the agnostic (as Engels puts it) conception of space and time. Just as things or bodies are not mere appearances, not complexes of sensations, but objective realities which act on our senses, so space and time are not mere forms of appearances, but objectively real forms of being. There is nothing in the world but matter in motion, and matter cannot move save in space and time. Human conceptions of space and time are relative, but on the basis of these relative conceptions we arrive at absolute truth. These relative conceptions in their development follow the line of absolute truth and continually approach it. The mutability of human ideas in regard to space and time no more refutes the objective reality of either than the mutability of scientific knowledge concerning the structure and forms of matter in motion refutes the objective reality of the outer world.

Engels, unmasking the inconsistent and muddled materialist Dühring, finds him speaking of the change in the *conception* of time (which is a real problem for some philosophers of importance) —and evading a direct answer to the question whether or not space and time are real or ideal. Are our relative conceptions of space and time approximations to real forms of being? Or are these only products of the developing, organising and harmonising human mind? This and this only is the fundamental problem of

[33] *Werke*, Vol. II, p. 332.

the theory of knowledge on which the fundamental philosophic schools divide. Says Engels in *Anti-Dühring*: "We have nothing to do with the transformation which goes on in the brain of Herr Dühring. We are not speaking of a concept of time, but of actual time, of which Herr Dühring cannot so easily dispose [that is, by the use of such phrases as the mutability of our conceptions]" (p. 77).

It would seem that this is sufficiently clear for even the Yushkeviches to grasp the heart of the question! Engels contrasts Dühring's position with the one generally accepted as obvious by every materialist, namely, that time is objectively real, saying that one cannot rid himself of the necessity of directly affirming or denying this proposition merely by arguing about our ideas of space and time. The point is not that Engels belittles the need and scientific significance of investigations of change and of the development of our conceptions of space and time, but he denies that with considerations such as these we consistently solve the epistemological problem of the source and significance of human knowledge in general. A somewhat intelligent philosophic idealist —and Engels, in speaking of the idealists, has in mind the great consistent idealists of classic philosophy—would easily admit the natural development of our conceptions of space and time. He would not cease to be an idealist in thinking, for example, that our naturally developed ideas of space and time approach some absolute idea or other, etc. It is impossible to hold consistently a point of view in philosophy which is inimical to fideism and idealism, if we do not definitely and straightforwardly recognise that our conceptions of time and space as they develop reflect the objectively existing real time and space; that they approach, as our ideas do in general, objective truth.

"The fundamental forms of all being," Engels teaches Dühring, "are space and time; being outside of time is just as much of an absurdity as being outside of space."

Why does Engels, in the first half of the quotation, almost literally repeat Feuerbach, and in the second, recall the struggle in which Feuerbach was the successful leader against the great absurdities of theism? Because Dühring, as can be seen from the same chapter in Engels, cannot make the ends of his philosophy meet without referring either to the "final cause" of the world, or to the "efficient cause" (another expression for "God," says Engels). Dühring,

desirous of being a materialist and an atheist no less than our Machians desire to be Marxians, cannot consistently adhere to the point of view which would undermine the idealist and fideist absurdity. Not recognising, at least not clearly and straightforwardly (for he strayed from this question and muddled it), the objective reality of space and time, Dühring inevitably rolls down the inclined plane to "final causes" and "efficient causes," for he deprives himself of the objective criterion which prevents one from going beyond the bounds of time and space. If time and space are only man's ideas and have been created by him, he has a right to go beyond their bounds just as the bourgeois professors have a right to receive their salaries from reactionary governments for defending the validity of this transcendence, for directly or indirectly defending the mediæval "absurdity." Engels showed Dühring that the denial of the objective reality of space and time is theoretically philosophic confusion, and practically a capitulation to or helplessness before fideism.

What does "recent positivism" teach us on this subject? Mach writes the following: "Space and time are well-ordered systems of series of sensations." [34] This is a palpable confusion, inevitably resulting from the doctrine that bodies are complexes of sensations. According to Mach it is not man with his sensations that exists in space and time, but space and time which exist in man which depend upon him and are generated by him. He feels that he is relapsing into idealism and "resists," by offering a number of excuses and burying the question in long disquisitions (especially in *Erkenntnis und Irrtum*) on the mutability and relativity of our conceptions of space and time. But this does not and cannot save him, for one can really overcome the idealist position on this question only by recognising the objective reality of space and time. But Mach does not wish to do this at all. He constructs his epistemological theory of space and time on the principle of relativism alone. Such construction, in the very nature of the case, cannot but lead to subjective idealism; this we have made clear in speaking of absolute and relative truth.

Opposing the idealist inferences which inevitably follow from his theses, Mach argues against Kant, insisting on the empirical origin of our concepts of space.[35] But if, as Mach teaches, objective

[34] *Die Mechanik*, etc., 3d German ed., p. 498.
[35] *Erkenntnis und Irrtum*, pp. 350, 385.

reality is not given us in experience, then such a retort to Kant does not in the least destroy the general position of agnosticism either in Kant or in Mach. If our conception of space is taken from experience and is not a reflection of objective reality outside of us, then the theory of Mach remains idealistic. The existence of nature in time which is measured in millions of years prior to the appearance of man, shows how absurd this idealist theory is.

"In the physiological relation," writes Mach, "time and space are sensations of orientation which together with sense perceptions determine the release (Auslösung) of biologically purposeful reactions of adaptation. In the physical relation, space and time are interdependences of physical elements" (*ibid.*, p. 434).

The relativist Mach confines himself to an examination of the *concept* of time in its various aspects! And he trifles with it just as Dühring does. If elements are "sensations" then the dependence of physical elements upon each other could not have existed either independently of man or before the emergence of organic matter. If the sensations of time and space can give man a biological orientation, it is only in virtue of the fact that these sensations reflect the objective reality outside of man. Man would never have adapted himself to his environment, if his sensations had not given him an objective representation of it. The doctrine of space and time is inseparably connected with the solution of the fundamental question of the theory of knowledge: are our sensations copies of bodies and things, or are bodies complexes of our sensations? Mach vacillates between both positions.

In modern physics, he says, Newton's views of absolute space and time prevail (pp. 442-444). These views seem senseless, says Mach, without even paying his respects to the materialists and their theory of knowledge. But in practice, he claims, this view was harmless and was therefore not criticised for a long time (p. 442).

This naïve remark about the harmlessness of the materialist view betrays Mach. In the first place, it is not true that the idealists did not criticise this view for a "long time." Mach simply ignores the struggle between the idealist and materialist theories of knowledge on this question; he evades the exposition of these views. In the second place, by recognising "the harmlessness" of the materialist views which he opposes, Mach recognises

their correctness; for if they were incorrect how could their effects be harmless for a period of centuries? What became of the criterion of practice with which Mach attempted to flirt? The materialist view of the objectivity of space and time is harmless only because natural science does not transcend the bounds of space and time, or the material world, leaving this occupation to the professors of reactionary philosophy. Such "harmlessness" is the equivalent of correctness.

Mach's idealist view of space and time is "harmful" because it opens the door to fideism and tempts Mach himself to draw reactionary conclusions. In 1872, for instance, he wrote that it is not necessary to conceive of chemical elements in three-dimensional space.[36] To do this would be "to impose upon ourselves unnecessary restriction. There is no more necessity to think of what is merely a product of thought spatially, that is to say, with the relation of visible and tangible, than there is to think of these things in a definite position in the scale of tones" (p. 51). "Perhaps the reason why hitherto people have not succeeded in establishing a satisfactory theory of electricity, is because they wished to explain electrical phenomena by means of molecular events in a space of three dimensions" (p. 54).

The argument from the standpoint of the straightforward and unmuddled Machism, which was openly defended by Mach in 1872, is indisputable: if molecules, atoms, in a word, chemical elements cannot be perceived, they are "only mental things" (*das bloss gedachte*). And if time and space have no objective reality, then it is obvious that we must not think of the molecules as occupying any space. Let physics and chemistry "limit themselves" to three-dimensional space in which matter moves; for the explanation of electricity, however, we may seek its elements in a space which is not three-dimensional!

That our Machians make an attempt to get around this Machian absurdity, though Mach himself repeats it in 1906,[37] is evident, for unless they did, they would have to put the question point blank concerning idealist and materialist views of space, without any evasion or effort to "reconcile" these contrary positions. As a matter of fact, in the 'seventies when Mach was not yet known, and when he met with refusals from "orthodox physicists" who would

[36] *Conservation of Energy*, p. 53 *ff.*
[37] *Erkenntnis und Irrtum*, p. 418.

not publish his articles, one of the chiefs of the immanentist school, Anton Von Leclair,[38] took this argument of Mach as a complete renunciation of materialism and as a confession of idealism! For at that time Leclair had not yet invented, or borrowed from Schuppe, Schubert-Soldern or Rehmke, the "new" sobriquet of "immanentist," but called himself critical idealist. This outspoken defender of theism who openly preached the doctrine in his philosophic works, immediately declared Mach a great philosopher, a "revolutionary in the best sense of the word" (p. 252), and he was absolutely right. The discussions of Mach show that he abandoned science for theism. Science both in 1872 and in 1906 was seeking and discovering—at least it was feeling its way—the atom of electricity,—the electron in three-dimensional space. Natural science does not doubt that the substance under investigation exists in three-dimensional space, and, hence, that its particles also, though they are so small that we cannot see them, nevertheless must exist in the same three-dimensional space. Since 1872, in three decades of stupendous success in investigating the structure of matter, the materialist view of space and time has remained "harmless," *i. e.*, compatible, as heretofore, with natural science. The contrary view of Mach *et al.* was a "harmful" capitulation of the position of science to theism.

In his *Science of Mechanics,* Mach defends the mathematicians who are studying the problems of imaginary space of *N* dimensions, against those who are accusing them of drawing "monstrous" conclusions from their investigations. The defence is undoubtedly just, but look at the *epistemological* position which Mach takes in his defence. The most recent mathematical study, says Mach, asks a very important and useful question about *N* dimensions, imaginary space, but "in actuality" there remains only space of three dimensions. Many theologians, therefore, who feel uneasy as to where hell should be placed, as well as the spiritualists, desire to make use of the fourth dimension.

Mach refuses the company of the theologians and the spiritualists —very good! But how does he separate himself from them in his theory of knowledge? With the argument that only three-dimensional space is real! But what sort of defence against the theologians and their kind is the previous denial of the objectivity of

[38] Anton Von Leclair: *Der Realismus der modernen Naturwissenschaft im Lichte der von Berkeley und Kant angebahnten Erkenntniskritik*, 1879.

space and time? You surreptitiously borrow from the materialists when you wish to separate yourself from the spiritualists. For the materialists, recognising the actual world, *i. e.*, matter, which is perceived by us as the objective reality, have a right to infer that no spectral human phantasm is real for any purpose whatsoever, so long as it is beyond time and space. But the Machians, although combating materialism and denying the objective existence of the world, secretly introduce it in their struggle with idealism, a doctrine which is consistent and fearless to the end. If in the relativistic conception of space and time there is nothing except the relative, if there is no objective reality independent of mankind, why should the majority of mankind not have a right to entertain conceptions of beings outside of space and time? If Mach has a right to seek atoms of electricity, or atoms in general, outside of three-dimensional space, then why should the majority of mankind not have a right to seek atoms or the foundations of morals outside of three-demensional space?

"There has never yet been an accoucheur who has helped a delivery by means of the fourth dimension," says Mach.

Indeed, an excellent argument but only for those for whom the criterion of practice is a confirmation of the objective truth and reality of our perceptual world. If our sensation give us an objectively true copy of the world existing outside of us, then the validity of the argument based upon the accoucheur and upon human practice holds good. But if so Machism, as a philosophic doctrine, is of no use at all.

"I do not anticipate," he continues, referring to his work of 1872, "that any one will defend ghost-stories (*die Kosten einer spuckgeschichte bestreiten*) with the help of what I have said and written on this question."

So you did not anticipate the statement that Napoleon did not die on May 5, 1821. You did not anticipate that Machism will be used in the service of ghost-stories when it has already served and still continues to serve the immanentist school.

But not only the immanentist school, as we shall see below. Philosophic idealism itself is only a thinly disguised ghost-story. Look at the French and English representatives of empirio-criticism, so much less pretentious than the German representatives of this philosophic school. Poincaré says that the concepts of time and

space are relative and that, consequently (for non-materialists it is indeed "consequently") nature does not give them to us but we, finding them convenient, give them to nature. Does this not justify the exultation of the German Kantians? Does this not confirm Engels' statement that a *consistent* philosophic doctrine should take either nature or human reason as primary?

The views of Karl Pearson are quite definite. He says: "Of time as of space we cannot assert a real existence; it is not in things but in our mode of perceiving them" (*loc. cit.*, p. 184). This is idealism, pure and simple. "Like space, it appears to us as one of the plans on which that great sorting-machine, the human perceptive faculty, arranges its material" (*ibid*). Pearson's conclusion, usually expounded in clear and precise propositions, is this: "Space and time are not realities of the phenomenal world, but the modes under which we perceive things. They are not infinitely large nor infinitely divisible, but are essentially limited by the contents of our perception" (p. 191).

This conscientious and honest enemy of materialism, with whom, to repeat, Mach often expresses his complete solidarity and who in turn outspokenly expresses his solidarity with Mach, does not invent a special label for his philosophy. Without the slightest evasion, he mentions the classic names of Hume and Kant, to whom he traces his philosophic genealogy (p. 192)!

And if in Russia, naïve people can be found who believe that Machism gave a "new" interpretation of space and time, then at least in relevant English literature, scientists, on the one hand, and idealists, on the other, at once took a definite position toward Pearson. For example, here is the opinion of Lloyd Morgan, the biologist: "Physics as such accepts the phenomenal world as external to, and for its purposes independent of, the mind of the investigator. He [Professor Pearson] is forced to go to a position which is largely idealistic. . . .[39] Physics, as a science, is wise, I take it, in dealing with space and time in frankly objective terms, and I think the biologist may still discuss the distribution of organisms of space and the geologist their distribution in time, without pausing to remind their readers that after all they are only dealing with sense-impressions and stored sense-impressions and certain forms of perceptions. . . . All this may be true enough, but it is out of place either in physics or biology" (p. 304). Lloyd

[39] *Natural Science*, 1892, Vol. I, p. 300.

Morgan is the representative of that agnosticism which Engels calls "shamefaced materialism," and however "irreconcilable" the divergent tendencies of such a philosophy are, nevertheless it holds that it is impossible to reconcile Pearson's views with science. With Pearson "at first the mind is in space, and afterwards, space in the mind," says another critic.[40] "There can be no doubt," remarked a defender of Pearson, "that the doctrine as to the nature of space and time which is associated with the name of Kant is the most important addition which has been made to the idealistic theory of human knowledge since the days of Bishop Berkeley, and it is one of the noteworthy features of the *Grammar of Science* that here, perhaps for the first time in the writings of English men of science, we find at once a full recognition of the general truth of Kant's doctrine, a short but clear exposition of it. . . ."[41]

Thus in England, neither for the Machians themselves, nor for their naturalistic adversaries, nor for their adherents among the expert in philosophy is there any shadow of doubt concerning the idealist character of Mach's views on the subject of space and time. Only a few Russian writers, desirous of being Marxists, "have not noticed" it. "Many of Engels' single views," Bazarov writes in the *Outlines* (p. 67), "as for example, his conception of 'pure' time and space, are now antiquated."

Yes, indeed! The views of the materialist Engels have become antiquated, but the views of the idealist Pearson and the muddled idealist Mach are modern! The most curious thing about it is that Bazarov does not even doubt that Engels' views of space and time, which turn upon the question of their objective reality, belong to those "single views" which he regards as antiquated in contradistinction to Engels' "starting point." Here is an example of that miserable hodge-podge to which Engels had already referred when he spoke of the German philosophy of the eighties. To contrast the "starting point" of the materialist doctrine of Marx and Engels with any of their "single views" of the objectivity of space and time, is as absurd as to contrast the "starting point" of the theory of Marx with his "single view" of surplus value. To separate the doctrine of Engels of the objectivity of time and space, from his doctrine of the transformation of "things-in-themselves" into

[40] I. M. Bentley: *Philosophical Review*, 1897, Vol. VI, p. 523.
[41] R. J. Ryle: *Natural Science*, August, 1892, p. 454.

"things-for-us," to separate it from his views of objective and absolute truth, *i. e.*, of an objective reality experienced through perception, to separate it from his recognition of objectivity of the laws of nature, causality and necessity,—is to reduce an entire philosophy into one of its single fragments. Bazarov became confused, as did all the Machians, about the mutability of human conceptions as regards space and time. He confused their exclusively relative character with the absolute truth that man and nature exist only in space and time.

He fails to see that the non-spatial and non-temporal beings which are invented by the clergy and are given credence by the ignorant fancy of the downtrodden masses, are products of a diseased mind, artful deceptions of philosophical idealism,—bad products of a bad social order. The scientific doctrine of the structure of substance, the chemical composition of food, and the electron may become antiquated with time; but the truth that man is unable to subsist on thoughts and beget children by platonic love alone can never become antiquated! And a philosophy which denies the objectivity of time and space is just as absurd, just as essentially foul and false as one which denies these several truths. The cunning of the idealists and the agnostics is on the whole as hypocritical as the sermons on platonic love by the Pharisees!

To illustrate the distinction between the relativity of our ideas of time and space and the absolute truth that everything must exist in space and time, I shall adduce a characteristic quotation from a very old and very pure "empirio-criticist," namely, the Humean, Schulze-Aenesidemus, who wrote in 1792:

"If we infer 'things outside of us' from the presentations within us, then space and time would prove to be something real, actually existing independently of us, for we can think of bodies only in existing space and of changes only in existing time" (p. 100).

Exactly so! Rejecting materialism and the least concession to it, this follower of Hume in 1792 describes the relation between the question of space and time and the question of an objectively existing reality just as Engels describes it in 1894 (the last preface to *Anti-Dühring* is dated May 23, 1894). This does not mean that in the course of time our conceptions of space and time do not change, that new material is not added in this evolution, material to which both Voroshilov-Chernov and Voroshilov-Valentinov point in order to refute Engels. That means that the relations of materialism and

agnosticism can not change, despite the "new" names with which our Machians like to parade. Bogdanov contributes nothing but "new" names to the old philosophy of idealism and agnosticism. When he repeats the arguments of Hering and Mach concerning the difference between physiological and geometric space, or between perceptual and conceptual space,[42] he merely repeats Dühring's mistake. One question arises as to how, with the help of various sense organs, does man perceive space, and how, through the processes of historical development we arrive at abstract ideas of space. Another question arises as to whether these percepts and concepts correspond to an objective reality existing independently of mankind. Bogdanov does not "notice" this last question (although it is the only philosophic one at issue) under the mass of detailed investigations with which it is overlaid. He can not, therefore, clearly contrast the materialism of Engels with the confusion of Mach.

Time and space are "forms of social agreement of the experiences of different people" (*ibid.*, p. 34); their objectivity is their "universality of meaning."

This is an absolute falsehood. Religion also has a universal meaning, for it expresses the social agreement of experience of the majority of mankind. But the teaching of religion, for example, concerning the past of our earth and the creation of the world does not correspond with the objective reality. That the earth existed before any "sociability," before man, before organic matter, that it has existed for a certain time, and in a certain space—to this teaching, though it is as relative at every step in the evolution of science as is each step in the evolution of religion, there does correspond an objective reality. For Bogdanov it would appear that the various forms of space and time adapt themselves to human experience and cognitive capacity. In fact just the reverse is true: our "experience" and our cognitions adapt themselves more and more to objective space and time, continually reflecting them with greater and greater accuracy.

6. *Freedom and Necessity*

On pages 140 and 141 of the *Outlines*, Lunacharsky cites from *Anti-Dühring* Engels' argument on the question of freedom and necessity, and agrees with his "remarkably precise and well-aimed"

[42] *Empirio-Monism*, Bk. I, p. 26.

characterisation of the problem on the corresponding "wonderful page" of that work.[43]

There is, indeed, much that is "remarkable" in it. But it is even still more "remarkable" that neither Lunacharsky nor the other set of Machians, who desire to be Marxists, "have noticed" the epistemological significance of Engels' discussion of freedom and necessity. Of course they read and copied it, but they did not understand what they were doing.

Engels says: "Hegel was the first man to give a proper explanation of the relation of freedom and necessity. In his eyes freedom is the recognition of necessity. 'Necessity is blind only in so far as it is not understood.' Freedom does not consist in an imaginary independence of natural laws but in a knowledge of these laws and in the possibility thence derived of applying them intelligently to given ends. This is true both as regards nature and as regards those forces which control the spiritual and physical existence of man himself—two classes of laws which we can distinguish as an abstraction, but cannot separate in reality. Freedom of the will consists in nothing but the ability to come to a decision when one is in possession of a knowledge of the facts. The freer the judgment of a man then in relation to a given subject of discussion, the more necessary is it that he arrive at a positive decision. . . . Freedom, therefore, consists in a mastery over ourselves and external nature founded upon the knowledge of the necessities of nature." [44] Let us examine the epistemologic propositions upon which this argument is based.

First, Engels recognises, at the very beginning of his discourse, the laws of nature, the laws of *external* nature, and the *necessity* of nature,—all that which Mach, Avenarius, Petzoldt, *et al.*, declared to be "metaphysics." If Lunacharsky had pondered over Engels' "wonderful" argument, he would have seen the fundamental difference between the materialist theory of knowledge and that of agnosticism and idealism, which deny the uniformity of nature, declaring it to be only "logical," etc., etc.

Second, Engels does not engage in sham "definitions" of freedom and necessity, those scholastic definitions which more than any-

[43] Lunacharsky says: " . . . a remarkable page of religious economics. I say this at the risk of provoking a smile from the irreligious reader." Whatever your good intentions may or may not have been, Comrade Lunacharsky, your playing with religion provokes not smiles but disgust.

[44] *Anti-Dühring*, pp. 147-148.

thing else engage the attention of the reactionary philosophers, as Avenarius, for example, and his pupil Bogdanov. Engels starts with the knowledge and volition of man—on one side, and the necessity of nature on the other—and instead of giving definitions, merely says that the necessity of nature is primary, and that of human volition and consciousness, secondary. The latter must operate in conformity with the former. Engels considers this to be so obvious that he does not waste words over it. Only the Russian Machians complain of Engels' general definition of materialism that nature is the *prius* and consciousness the derived (remember Bogdanov's "perplexity" at that!). And yet at the same time they find one of Engels' partial applications of this general and fundamental definitions "remarkably well-aimed!"

Third, Engels does not doubt the existence of "blind necessity." He recognises the existence of a necessity which is not known to man. This is obvious in the passage which we have quoted. Yet from the standpoint of the Machians it follows that man cannot know of the existence of that which he has no knowledge of. To have knowledge of the existence of "unknown necessity"—is this not "mysticism," "metaphysics," recognition of "fetishes" and "idols"—is it not the "Kantian unknowable thing-in-itself"? Had the Machians given the matter a little more thought, they would not have failed to notice the complete similarity of Engels' argument concerning knowledge of the objectivity of nature and the transformation of things-in-themselves into things-for-us, on the one hand, and his argument concerning blind necessity, on the other. The development of consciousness in each individual and the development of the collective knowledge of humanity at large shows us at each step the transformation of the unknown "thing-in-itself" into the known "thing-for-us," the transformation of blind, unknown necessity, "necessity-in-itself," into "necessity known to us." Epistemologically there is no difference between one transformation and the other, for their basic viewpoint is materialistic, *i. e.*, the recognition of the objective reality of the external world and of the laws of nature. The world and its laws are absolutely knowable to man, but they can never be completely known. We do not know natural necessity in the phenomena of the weather, and to that extent we are slaves of the weather. Nevertheless without knowledge of this necessity, we know that it exists. Whence this knowledge? Whence the knowledge that things exist outside of knowledge

and independent of it? Only from the historical development of our knowledge in the course of which every man has learned millions of times that his ignorance gives way to knowledge when an object acts on his sense-organs and vice versa: that knowledge becomes ignorance when the possibility of such action is eliminated.

Fourth, in the above-mentioned argument Engels palpably applies the "salto-vitale" method in philosophy, that is, he makes a leap from theory to practice. None of those learnedly stupid professors of philosophy, in whose footsteps our Machians follow, ever permit themselves to make leaps which are unbecoming to representatives of "pure science." For them the theory of knowledge is one thing, for which they must invent some cunning "definition," and practice another. For Engels the whole of human practice is part of the theory of knowledge thus giving an objective criterion of truth. Until we acquire knowledge of the laws of nature, which exist and act independently of our mind, we are slaves of "blind necessity." When we acquire knowledge of laws which act—as Marx repeated a thousand times—independently of our volition and our consciousness, we acquire mastery of nature. The domination over nature, which manifests itself in human practice, is a result of an accurate objective "reflection" within the mind of man, of the phenomena of nature, and is proof that this "reflection" within the bounds of practice expresses an objective, absolute, and eternal truth.

What is the upshot of this discussion? Each step of Engels' argument, literally each phrase, each proposition, is constructed wholly on the basic theory of knowledge of dialectic materialism, of propositions which stand out in contrast with the absurdity of Mach, who regards bodies as complexes of sensations or "elements" and for whom perceptions and reality are identical. Without any feeling of shame, the Machians give vent—in the manner of Berman —to vulgar remarks about dialectical materialism. They take all their philosophy from an eclectic mess of porridge and treat the reader to it. They take a little from agnosticism, a little from idealism and a little from Mach, combine them with a little from the dialectical materialism of Marx, and call this mixture an improvement upon Marxism. They imagine that if Mach, Avenarius, Petzoldt, *et al.*, whom they consider authorities, had not the slightest conception of how Hegel and Marx solved the question of freedom

and necessity, it was sheerly through accident. They simply failed to read through a page here and there. They do not know that in reality these "authorities" were and still are ignoramuses, in regard to the real progress of philosophy in the nineteenth century; they do not seem to be aware that their "authorities" are simply philosophical obscurantists.

Here is the argument of one such obscurantist, namely, the professor of philosophy at the University of Vienna, Ernst Mach: "The truth of the position of determinism or indeterminism cannot definitely be established. Only a completed science or a science which would prove to be impossible could determine this question. It is a question of the presuppositions which we bring to the examination of things, depending upon whether or not we ascribe to former successes or failures of investigations a more or less subjective weight. But at the moment of investigation each thinker is of necessity a theoretical determinist." [45]

Is not this careful separation of pure theory from practice—obscurantism, especially since determinism is confined to the domain of "investigation," while in the domain of morality, social activity, and all other fields which exclude "investigation," the question is left to a "subjective estimate"? In my workroom, says the pedant, I am a determinist. But that the philosopher should think of the whole, should embrace both theory and practice under a deterministic *Weltanschauung*, that is altogether out of the question. Mach utters banalities because theoretically he is not at all clear on the question of freedom and necessity. ". . . Each new discovery discloses the limitations of our knowledge, reveals the remainder of the functional dependencies which were not noticed before . . ." (p. 283).

Is this "remainder" the "thing-in-itself" into which our knowledge penetrates deeper and deeper? Not at all: "Thus the one who in theory defends extreme determinism, must in practice remain an indeterminist . . ." (p. 283). Well, here they shared things peacefully—theory to the professors, practice to the theologians! Or in theory, objectivism, "shamefaced" materialism, in practice the "subjective method in sociology".[46] No wonder that the Russian ideolo-

[45] *Erkenntnis und Irrtum*, pp. 282-283.

[46] Mach in *The Science of Mechanics* says: "Our religious opinions are always our own private affairs as long as we do not obtrude them upon others and do not apply them to things which come under the jurisdiction of a different tribunal" (p. 464).

gists of Philistinism, from Lessevich to Chernov, voiced their sympathy with this vulgar philosophy. And it is a sad fact that people who wish to be Marxists are led into this fallacy, bashfully hiding the more conspicuous follies of Mach.

But on the question of freedom of the will, confusion and partial agnosticism are not sufficient for Mach; he goes much further. "Our sensation of hunger," we read in *The Science of Mechanics*, "is not so essentially different from the tendency of sulphuric acid for zinc, and our will is not so greatly different from the pressure of the stone as it appears. . . . Thus we feel ourselves nearer nature [that is, if we hold such a view] without it being necessary that we should resolve ourselves into a nebulous and mystical mass of molecules, or make nature a haunt of hobgoblins" (*ibid.*). Thus we have no need of materialism ("nebulous atoms" or electrons, the recognition of the objectivity of the world), we have no need even of an idealism which would recognise the world as "the otherness" of spirit; but the possibility of an idealism which recognizes the world as *will* is granted by them. We do not only refuse to deal with materialism but also with the idealism of "a" Hegel, yet we do not mind stooping to flirt with an idealism in the spirit of Schopenhauer! Our Machians, who put on an innocent air when even mention is made of the kinship of Mach to philosophic idealism, prefer here also to keep silent about this delicate question. Yet it is hard to meet an exposition of the views of Mach in philosophic literature which does not mention his inclinations towards the *Willensmetaphysik*, that is, towards a voluntaristic idealism. Baumann [47] points this out, and Kleinpeter, the Machian, does not in his rejoinder take exception to this point, but declares that Mach is, of course, "nearer to Kant and Berkeley than to the prevailing metaphysical empiricism in science," (*i. e.*, instinctive materialism, *ibid.*, Vol. 6, p. 87). Becher,[48] too, points to this, remarking that if Mach in certain places adopts a voluntaristic metaphysics, and in others renounces it, it shows the looseness of his terminology. In fact Mach's kinship to the metaphysics of voluntarism is beyond doubt. Even Lucka [49] admits the admixture of this metaphysics of idealism with "phe-

[47] *Archiv für systematische Philosophie*, II, Vol. 5, p. 63, the article "On the Philosophical Views of Mach."

[48] Erich Becher: "The Philosophical Views of Mach" in the *Philosophical Review*, 1905, Vol. XIV, 5, 1905, pp. 536, 546, 547, 548.

[49] E. Lucka: "Das Erkenntnisproblem und Machs Analyse der Empfindungen," *Kantstudien*, 1903, Vol. VIII, p. 400.

nomenalism," or agnosticism. Wundt [50] also points it out. That Mach is a phenomenalist who is "not a stranger to voluntaristic idealism" is attested in Ueberweg-Heinze's textbook of the history of modern philosophy.[51]

In short, the eclecticism of Mach and his pronounced bent towards idealism is clear to everyone, save the Russian Machians.

[50] *Systematische Philosophie*, 1907, p. 131.

[51] *Grundriss der Geschichte der Philosophie*, Berlin, 1903, 9th ed., Vol. IV, p. 250.

CHAPTER FOUR

THE PHILOSOPHIC IDEALISTS AS ASSOCIATES AND SUCCESSORS OF EMPIRIO-CRITICISTS

We have been examining empirio-criticism as such. We must now examine it in its historical development, in its connection and correlation with other philosophic tendencies. First comes the question of the relation of Mach and Avenarius to Kant.

1. *The Criticism of Kantianism from the Left and from the Right*

Both Mach and Avenarius came to the fore in the seventies when, in German professorial circles, the fashionable slogan "Back to Kant" had been proclaimed. In their philosophic development both founders of empirio-criticism took their starting point from Kant. "His [Kant's] critical idealism was, I recognise with the greatest gratitude, the starting point of all my critical thought; but it was impossible for me to retain my allegiance to it. I very soon began to gravitate again towards the views of Berkeley, which are contained, in a more or less latent form, in Kant's writings. By studying the physiology of the senses, and by reading Herbart, I then arrived at views akin to those of Hume, though at that time I was still unacquainted with Hume himself. To this very day I cannot help regarding Berkeley and Hume as far more logically consistent thinkers than Kant." [1]

As we see, Mach very definitely acknowledges that, having begun with Kant, he soon followed Berkeley and Hume. Let us turn to Avenarius.

In the preface to his *Prolegomena*, etc. (1876), Avenarius remarks that the words *Kritik der reinen Erfahrung* indicate both his relation to Kant's *Kritik der reinen Vernunft* and his "antagonistic attitude" towards him (p. iv). In what does his antagonism to Kant consist? Kant, in Avenarius' opinion, had not sufficiently "purged experience." This "purging" of experience engages Avenarius' at-

[1] *Analysis of Sensations*, p. 367.

tention in his *Prolegomena* (§ 56, p. 72*ff*). Of what does Avenarius "purge" the Kantian doctrine? In the first place, of apriorism. He says: "The question as to whether we should eliminate from experience the *a priori* conceptions of reason on the grounds that they are superfluous, and instead start with pure experience is, as far as I know, put here for the first time." We have seen that Avenarius has already "purged" Kantianism of the recognition of necessity and causality.

Secondly, he purges Kantianism of its admission of substance (§ 95) *i. e.* of the thing-in-itself, which, in Avenarius' opinion, "is not given in the stuff of actual experience but is imported into it by reflection."

We shall soon see that Avenarius' confession of his philosophic point of departure is in full accord with that of Mach and differs only in the pretentiousness of its presentation. But we must first note that Avenarius is telling an untruth that in 1876, for the first time, he put the question of "purging experience," that is, of clearing the Kantian doctrine of its apriorism and its recognition of the thing-in-itself. In fact, the development of German classic philosophy after Kant resulted in a criticism of Kantianism which is exactly in the same direction which Avenarius himself took. This tendency in German classic philosophy is represented by Schulze-Aenesidemus, an adherent of Humean agnosticism, and Fichte, an adherent of Berkeleianism. In 1792 Schulze-Aenesidemus criticised Kant for the recognition of apriorism (*loc. cit.*, pp. 56, 141 *ff*) and the existence of the thing-in-itself. We sceptics or adherents of Hume, said Schulze, entirely deny the existence of the thing-in-itself, supposedly lying beyond "the bounds of all possible experience" (p. 57). We deny objective knowledge (p. 25), and we deny that space and time exist outside of us (p. 100); we deny the presence of necessity in our experience (p. 112), of causality, force, etc. (p. 113). We ought not attribute to these conceptions any "reality outside of our representations" (p. 114). Kant "dogmatically" proves the presence of apriority, by saying that "if we cannot think any differently than we do there are, therefore, *a priori* laws of thought." "This method of reasoning," Schulze insists, "was utilised in philosophy long ago, to prove the objective nature of that which lies beyond our conceptions" (p. 141). So arguing we may attribute causality to the thing-in-itself (p. 142). "Experience never tells us (*wir erfahren niemals*) that the action of objects

produce impressions within us," and Kant did not in the least prove that "the something which lies beyond our reason must be regarded as the thing-in-itself as distinct from our sensation or feeling (*Gemüt*). Sensations may be thought of as the sole basis of our knowledge" (p. 265). The Kantian critique of pure reason "bases its argument on the proposition that every cognition begins with the action of objective things on our nature [*Gemüt*], but it subsequently calls into question the veracity of this proposition" and the reality of its subject (p. 266). Kant in no way refutes Berkeley (pp. 268-272).

It is evident from this that Schultze rejects the doctrine of Kant—rejects the "dogmatic" assertion that we experience objective reality, that our presentations are caused by the action of independently existing objects upon our sense-organs—and therefore regards the thing-in-itself as an inconsistent concession to materialism. The agnostic Schulze reproaches the agnostic Kant for the latter's recognition of the thing-in-itself,—a recognition which is incompatible with agnosticism and ultimately leads to materialism. In the same fashion, but much more vigorously, Kant is criticised by the subjective idealist, Fichte, who maintains that Kant's recognition of the thing-in-itself as independent of the self is tantamount to "realism" [2] and that Kant makes no clear distinction between "realism" and "idealism." Fichte sees the most incongruous inconsistency in the admission on the part of Kant and his followers that the thing-in-itself is the "basis of objective reality" (p. 480) for this leads to a contradiction within "critical idealism." "With you it seems," says Fichte of the realist commentators upon Kant, "that the earth rests on the whale, and the whale rests on the earth. Your thing-in-itself, which is only thought, in turn acts on the Self" (p. 483).

Avenarius had made a great mistake in imagining that he "purged experience" of Kant's thing-in-itself and apriorism "for the first time" and that he gave rise to a "new" movement in philosophy. In reality he merely followed along the old lines of Hume, Berkeley, Schulze-Aenesidemus and Fichte. Avenarius imagines that he has "purified experience" in general. In reality he has only purged Kantianism of agnosticism. He does not combat the agnosticism of Kant (agnosticism is a denial of objective reality of that which is given in sensation), but he strives to attain a purer agnosticism, making all efforts to eliminate Kant's inconsistent recognition of a

[2] *Werke*, Vol. I, p. 483.

thing-in-itself, which is unknowable, *noumenal* and otherworldly; contesting the existence even of an *a priori* necessity and causality, which Kant held was given to us by our understanding and not derived from objective reality. He attacks Kant not from the left, as the materialists do, but from the right in the manner of the sceptics and idealists. Avenarius imagines that he is making progress, when in reality he is only returning to the program of the old critical attack upon Kant. Kuno Fischer, speaking of Schulze-Aenesidemus, well characterised his standpoint in the following words: "*The Critique of Pure Reason* with pure reason [apriorism] left out, is scepticism. The *Critique of Pure Reason*, with the thing-in-itself left out, is Berkeleian idealism." [3]

We now approach one of the most curious episodes of Machism, that is, the campaign of the Russian Machians against Engels and Marx. The latest discovery by Bogdanov, Yushkevich and Valentinov, which they so loudly proclaim, is of Plekhanov's "luckless attempt to reconcile Engels with Kant, the compromise being the barely knowable thing-in-itself" (*Outlines*, p. 67*ff*). This discovery of our Machians leads to unheard-of blunders, and betrays a failure to understand Kant and to grasp the sense of the entire development of German classic philosophy.

The principal feature of the philosophy of Kant is an attempted reconciliation of materialism and idealism, a compromise between the claims of both, a fusion of heterogeneous and contrary philosophic tendencies into one system. When Kant admits that something outside of us—a thing-in-itself—corresponds to our perceptions he seems to be a materialist. When he, however, declares this thing-in-itself to be unknowable, transcendent, "trans-intelligible"—he appears to be an idealist. Regarding experience as the only source of our knowledge, Kant seems to be turning toward sensationalism and by way of sensationalism, under certain special conditions, toward materialism. Recognising the apriority of space, time, and causality, etc., Kant seems to be turning towards idealism. Consistent materialists, and consistent idealists, as well as the "pure" agnostics and Humeans, criticise him for this inconsistency. The materialists accuse him of idealism. They refute the idealistic features of his system, prove the possibility of knowledge, the thissidedness of the thing-in-itself, the absence of a radical difference between the thing-in-itself and the phenomenon, and insist upon the

[3] *Die Geschichte der neuer Philosophie*, 1869, Vol. V, p. 115.

need of deducing causality and similar concepts not from the *a priori* laws of reason, but from objective reality. The idealists and the agnostics object to Kant's "thing-in-itself" as being a concession to materialism, "realism" or naïve realism. The agnostics reject not only the thing-in-itself but apriorism as well; while the idealists demand a consistent deduction from pure thought not only of the *a priori* forms of understanding, but of the world as a whole (which is done by stretching the human understanding until it becomes the "abstract Self," or "absolute Idea" or "universal Will," etc.). And here our Machians without being "aware" that they had taken as their teachers men who had criticised Kant from the viewpoint of scepticism and idealism, begin to tear their clothes and to cover their heads with ashes, catching sight of strange people who criticised Kant from a diametrically opposed point of view, who rejected every bit of agnosticism, scepticism, and idealism in his system, who proved that the thing-in-itself is objectively real, absolutely knowable, that it is *not* otherworldly and does *not* differ essentially from "appearance," that the thing-in-itself manifests itself as an "appearance" at each step in the development of the individual and collective consciousness of man—catching sight of such people, they begin to shout: "Help! Help! Here is an illicit product of materialism and Kantianism!"

When I read the assurances of the Machians to the effect that they are more consistent and definite than the obsolete materialists in their criticism of Kant, it seems to me as if a Purishkevich [4] had stepped into our company and shouted, that he criticises the Constitutional-Democrats [5] more consistently and definitely than do the Marxians. No question about it, Mr. Purishkevich, politically consistent people always can and will criticise the Constitutional-Democrats from diametrically opposed points of view, but one must not forget, however, that you criticised them for being too democratic, and we criticised them for not being democratic enough! The Machians criticise Kant for being too much of a materialist

[4] Purishkevich, V. M. (born 1870). An extreme reactionary leader and Jew-baiter; member of the *Duma*. His name was a synonym for blackest reaction during the Tsarist régime.—*Ed.*

[5] A political party of liberals, formed after the Revolution of 1905, whose aim was to establish a constitutional régime in Russia and whose outstanding leader was Prof. Paul Milyukov. The remaining erstwhile leaders of this party are in the main political emigrés engaged in hostile campaigns against the Russian Revolution and the Soviet Government.—*Ed.*

and we criticise him for not being more of a materialist. The Machians criticise Kant from the right; we, from the left.

The Humean, Schulze, and the subjective idealist, Fichte, may be taken as examples of "critics of the right" in the history of classic German philosophy. As we have already seen, they try to eliminate the "realistic" elements in Kantianism. Just as Kant himself was criticised by Schulze and Fichte, so are the German Neo-Kantians of the second half of the nineteenth century criticised by Humean empirio-criticists and subjective idealists — immanentists. The same tendency which Hume and Berkeley expressed, appears beneath a somewhat verbally repatched garb. Mach and Avenarius reproach Kant not because his treatment of the thing-in-itself is not sufficiently realistic and materialistic, but because he has admitted its existence altogether. Kant is reproached not for his refusal to derive causality and necessity from objective reality, but because he admits the presence of causality and necessity excepting perhaps "logical" necessity. The immanentists are at one with the empirio-criticists in criticising Kant from the standpoints of Hume and Berkeley. For instance, Leclair in 1879, in the work in which he praised Mach as a remarkable philosopher, reproached Kant for his "inconsistency and connivance with realism," which expressed itself in the conception of the thing-in-itself, —this "nominal residuum of vulgar realism." [6]

Leclair speaks of materialism as "vulgar realism," in an attempt to make his criticism stronger. "According to our opinion," writes Leclair, "all those parts of the Kantian theory which tend towards vulgar realism should be eliminated from idealism as being an inconsistent and bastard (*Zwittenhaft*) product" (p. 41). "The inconsistencies and contradictions" in the teaching of Kant arise from a "mixture (*Verquickung*) of idealistic criticism and the irresolvable remnants of realistic dogmatism" (p. 170). By realistic dogmatism Leclair also means materialism.

Johannes Rehmke, another follower of the immanence school, reproached Kant because he barred himself from Berkeley with the realistic remnant of the thing-in-itself.[7] "The philosophical activity of Kant bore essentially a polemical character: through the thing-in-itself he directed his philosophy against German rationalism

[6] *Der Realismus der modernen Naturalismus*, p. 9.

[7] Johannes Rehmke: *Die Welt als Wahrnehmung und Begriff*, Berlin, 1880, p. 9.

[that is, against the old theism of the eighteenth century], and through pure reason against English empiricism" (p. 25). "I would compare the Kantian thing-in-itself with a movable trap placed over a ditch: the thing looks very innocent and secure, but by stepping upon it, you immediately fall into the abyss of the world-in-itself" (p. 27). That is why Kant is not liked by the immanentist associates of Mach and Avenarius. He borders in some respects upon the "abyss" of materialism!

And here are examples of the attack on Kant from the left. Feuerbach reproaches Kant not for his "realism" but for his idealism, characterising his system, as an "idealism erected on the basis of empiricism." [8]

Here is another important remark of Feuerbach on Kant: "Kant says that if we regard—as we ought—the objects of our perceptions as mere phenomena, we thereby admit that at the bottom of phenomena there are things-in-themselves. Although we do not know their inner construction, we know their phenomena—the manner in which those unknown somethings, affect our senses. Hence, our reason, in admitting the existence of phenomena, also admits the existence of things-in-themselves; and thus we can say that to postulate the existence of entities which are at the bottom of phenomena, which are the cause of sense impressions, is not only permissible but necessary. . . ."

Having selected a passage in Kant where the thing-in-itself is regarded as a mental concept, a psychological essence and not a real thing, Feuerbach directs all his criticism at it. "Therefore," he says, "the objects of perception, the objects of experience are for the understanding only phenomena, not truth. . . ." The mental impression, as you see, does not represent actual objects for the understanding! The Kantian philosophy is a hopeless confusion between subject and object, essence and existence, thinking and being. The "essence" of anything is given to the understanding, its existence to perception. But existence without essence, the existence of phenomena without objective reality, "is a mere phenomenon, it is a perceptual object; while essence without existence is a purely conceptual essence, a *noumenon*. We can and ought to think of them, but they lack existence and objectivity,—at least for us. They are things-in-themselves, true things, but they are not real things. . . . What a contradiction, to separate truth from reality,

[8] *Werke*, Vol. II, p. 296.

reality from truth!" [9] Feuerbach criticises Kant not for his recognition of the thing-in-itself, but because he does not recognise its actuality, its objective reality. because he regards it as a mere thought, a mental concept, not as a kind of entity which can be predicated upon anything that is real, actual and existing. Feuerbach attacks Kant for his deviation from materialism.

"The Kantian philosophy is contradictory," Feuerbach wrote to Bolin on March 26, 1858, "it inevitably leads either to Fichtean idealism or to sensationalism." The first alternative "belongs to the past," the second to "the present and future." [10] We have already seen that Feuerbach defends objective sensationalism, *i. e.*, materialism. The new turn from Kant to agnosticism and idealism, to Hume and Berkeley, is undoubtedly reactionary, even from the viewpoint of Feuerbach. And his ardent adherent, Albrecht Rau, who inherited the merits of Feuerbach together with those of his master's faults which were later rectified by Marx and Engels, criticises Kant wholely in the spirit of his teacher:

"The philosophy of Kant is a profound ambiguity; it is both materialism and idealism, and the key to its essence lies in its dual nature. As a materialist or an empiricist, Kant cannot help recognising the existence of things outside of us; but as an idealist he cannot rid himself of the prejudice that the soul is something totally different from sensible things. There are real things, and the human mind which apprehends those things. How does the mind approach things totally different from itself? This is how Kant evades the difficulty: the mind possesses certain *a priori* cognitive forms, in virtue of which things must appear as they do. Hence, the fact that we understand things as we do, is due to our own creative power, for the mind which lives in us is part of a divine mind, and just as God created the world out of nothing, so the human mind creates out of certain things, something which they themselves do not possess. Thus Kant guarantees to real things their existence as 'things-in-themselves.' The soul is a necessary prerequisite for Kant, for immortality is to him a moral precept. The 'thing-in-itself,' gentlemen [says Rau, to the Neo-Kantians in general and the muddle-headed Lange in particular, who falsified the History of Materialism] is what separates the idealism of Kant from the idealism of Berkeley, it spans the gap between materialism and idealism.

[9] *Werke*, Vol. II, p. 303.
[10] Grün: *loc. cit.*, Vol. I, p. 49.

Such is my criticism of the Kantian philosophy and let those who can reject this criticism. For the materialist the distinction of *a priori* knowledge from the 'thing-in-itself' is absolutely superfluous; nowhere does he break connections in nature, nowhere does he regard matter and mind as basically different things; he regards them only as different sides of the same thing and therefore has no need of the stratagem of making them approach one another." [11]

Engels himself, as we have seen, criticised Kant for his agnosticism but not for his *inconsistent* agnosticism. Lafargue, the disciple of Engels, in 1900 argued thus against the Kantians, amongst whom at that time was Charles Rappoport:

". . . At the beginning of the nineteenth century our bourgeoisie, having completed its task of revolutionary destruction, began to refute the philosophy of Voltaire. Catholicism, which Chateaubriand painted in romantic colours, again became fashionable, and Sebastian Mercier finally imported the idealism of Kant to dispatch the materialism of the Encyclopædists, whose outstanding protagonists had been guillotined by Robespierre.

"At the end of the nineteenth century, which will go down in history as the 'bourgeois century,' the intellectuals attempted to crush the materialism of Marx and Engels with the aid of the philosophy of Kant. This reactionary movement started in Germany. I do not mean to offend our socialist *integralistes* who would like to ascribe all honor to Malon, the founder of their school. But Malon himself is in reality a graduate of the school of Höchberg, Bernstein and the other disciples of Dühring who began to reform Marxism in Zürich. [Lafargue is speaking of the well-known ideological movement in German socialism in the latter seventies.] We must also expect Jaurés, Fournier and our other intellectuals to present us with Kant when they shall have become familiar with his terminology. . . . Rappoport is mistaken when he assures us that for Marx 'idea and reality are fundamentally identical.' First of all we never employ such metaphysical phraseology. The idea is as real as the object, of which it is the reflection in the brain. . . . To amuse the comrades who are acquainting themselves with the bourgeois philosophy, I shall expound the substance of this famous problem which obsesses spiritualistic minds.

[11] Albrecht Rau: *Ludwig Feuerbach's Philosophie, die Naturforschung und die philosophische Kritik der Gegenwart*, Leipzig, 1882, pp. 87-89.

"The working-man who thrives on sausage and receives five francs a day knows very well that his employer who robs him lives on pork; that the employer is a thief and that sausage is delicious and nourishing to the body. Not at all, says the bourgeois sophist, regardless of whether he is called Pearson, Hume or Kant. The opinion of the worker is his personal, his subjective opinion; he might very well maintain with the same right that his employer is his benefactor and that sausage consists of chopped leather, for he is unable to know the thing-in-itself. . . .

"The question is not well put, and its difficulty lies in this. . . . To know the object, the individual must first discover whether his senses deceive him or not. . . . But the chemists, however, go still further,—they penetrate into the heart of objects, analyse them, decompose them into their elements, and then perform the reverse procedure, of recomposing the body from its elements. And from the moment that man is able to produce things from these elements for his own use, he may, as Engels says, assert that he knows things-in-themselves. The Christian God, if he existed and created the world, could do no more." [12]

We have permitted ourselves to quote this long passage in order to show how Lafargue understands Engels and how he criticises Kant from the left—criticises not those aspects of Kantianism which are different from the philosophy of Hume but those which are common to both Kant and Hume; not for his admission of the thing-in-itself, but for his inadequate materialistic account of it.

And lastly Kautsky, in his *Ethics*, also criticises Kant from a viewpoint contrary to that of Hume and Berkeley. "My organs of vision have only the function of making me conscious of this difference in a certain form, that of colour. . . . That I see green, red and white, has its ground in my organs of sight. But that the green is different from red, testifies to something that lies outside of me, to a real difference between the things. . . . But the relations and distinctions of the things themselves, which are shown to me by means of the individual space and time concepts . . . are real relations and distinctions of the external world, which are not conditioned by the nature of my faculty of knowledge. . . . Thus if the doctrine of Kant about the ideality of time and space were true,

[12] Paul Lafargue: "Le materialisme de Marx et l'idéalisme de Kant," *Le Socialiste*, February 25, 1900.

we could know absolutely nothing about the world outside of us, not even that it existed." [13]

Thus the whole school of Feuerbach, Marx and Engels turns from Kant to the extreme left, and completely rejects all kinds of idealism and agnosticism. But our Machians follow the reactionary trend in philosophy, follow Mach and Avenarius who criticise Kant from the standpoints of Hume and Berkeley. Of course, to espouse a reactionary ideology is within the sacred rights of every citizen and, especially, of every intellectual. But when people, who have severed their relations with the fundamental tenets of the Marxian philosophy, begin to dodge, confuse, evade and go so far as to assure us that they "too" are Marxians in philosophy, that they are "almost" in agreement with Marx and have only "supplemented" him,—such a spectacle is far from agreeable.

2. *How the "Empirio-Symbolist" Yushkevich Ridiculed the "Empirio-Criticist" Chernov*

"It is ludicrous," writes Mr. Yushkevich, "to see how out of the agnostic, Comtean and Spencerian positivist, Mikhailovsky, Mr. Chernov wishes to make a precursor of Mach and Avenarius" (*loc. cit.*, p. 73).

Ludicrous, above all, is the stupendous ignorance of Mr. Yushkevich. Like all Voroshilovs, he conceals his ignorance with a display of erudite names and words. This citation is from a passage which is supposed to elucidate the relation of Machism to Marxism. And having taken it upon himself to treat of the subject, Mr. Yushkevich does not know that for Engels, as for every materialist, both the adherents of the Humean tendency and the adherents of the Kantian tendency, are equally agnostic. Therefore, to contrast agnosticism with Machism in general, when Mach acknowledges himself to be an adherent of Hume, is to be a philosophic ignoramus. The phrase "agnostic positivism" is also absurd, for the adherents of Hume call themselves positivists. Mr. Yushkevich who has taken Petzoldt as his teacher, must have known that Petzoldt directly links up empirio-criticism with positivism. And finally, the mere mention of the names of Auguste Comte and Herbert Spencer is absurd, for Marxism does not reject that which distin-

[13] Karl Kautsky: *Ethics and the Materialist Conception of History*, Chicago, 1907, p. 44.

guishes one positivist from another, but that which they both have in common, that which makes a philosopher a positivist, instead of a materialist.

This entire jumble of words was necessary to Voroshilov in order to abash the reader, to stun him with the sound of words, to divert his attention from the essence of the matter and direct it to trifles. And the essence of the matter consists in a radical disparity between materialism and the broad movement of positivism, which includes as its representatives—Comte, Spencer, Mikhailovsky, and a host of other Neo-Kantians, together with Mach and Avenarius. The heart of the matter had been fully and definitely expressed by Engels in his *Feuerbach*, where he puts all the Kantians and Humeans of the eighties, in the same camp as the wretched eclectics, *Flohknacker*, etc. To whom this characterisation could apply—of this our Voroshilovs could not think. And as they are incapable of doing any thinking, we shall here adduce a comparison that will shed some light on the subject. As a matter of fact Engels, speaking in 1888 and 1891 of the Kantians and Humeans in general, does not mention any names. The only reference made in his book is that of the relation of Starcke to Feuerbach. "Starcke takes great pains to defend Feuerbach against the attacks and doctrines of those college instructors who plume themselves nowadays in Germany upon being philosophers. It is true that this is a matter of importance to those people who take an interest in the degenerate progeny of German classic philosophy; to Starcke himself this might appear necessary. We spare the reader this, however" (*Feuerbach*, p. 75).

Engels wished to "spare the reader," that is to spare the social-democrats from making the acquaintance of the degenerate prattlers who call themselves philosophers. Now, who are the representatives of the "degenerate progeny"?

We open Starcke's book [14] and there we find constant references to the adherents of Hume and Kant. Starcke excludes Feuerbach from the two movements ushered in by these men. Starcke quotes Riehl, Windelband and Lange (pp. 3, 13-19, 127).

We open Avenarius' *Der menschliche Weltbegriff*, and we read the following on page 120 of the first edition: "The final result of our analysis is based upon the concurrence—though not in absolute accordance with the differences between the several points of view

[14] C. N. Starcke: *Ludwig Feuerbach*, Stuttgart, 1885.

—with the conclusions which other investigators have reached, for example, Laas, Mach, Riehl, Wundt, and also Schopenhauer."

Whom did our Voroshilov-Yushkevich ridicule?

Avenarius does not at all doubt that in principle he is akin not in respect to detail but in respect to the "final result" of empirio-criticism—to the Kantians, Riehl and Laas, and the idealist Wundt. Mach is mentioned together with the two Kantians. Indeed, do they not make one company, since Riehl and Laas play at being Kantians although they are followers of Hume, while Mach and Avenarius play at being followers of Hume although they are Berkeleians?

Is it to be wondered at, then, that Engels wished to "spare" the German workers from intimate acquaintance with the company of "flea-crushing" academicians? Engels spares the German workers but the Voroshilovs do not spare the Russian reader.

It should be noted that an eclectic combination of Kant and Hume, or Hume and Berkeley, is possible, so to speak, in various proportions, due emphasis being placed now upon one element of the mixture, and now upon another. We have seen that only one Machian, Mr. Kleinpeter, openly admits that he and Mach are solipsists,—consistent Berkeleians. But on the contrary, the Humean tendency of Mach and Avenarius is emphasised by many of their disciples and adherents: Petzoldt, Willy, Pearson, the Russian empirio-criticist Lessevich, the Frenchman Delacroix [15] and others. We shall here cite as an example an important scientist, who in philosophy also connects Hume with Berkeley, but who accentuates the materialist elements of such an admixture. He is Huxley, the famous English naturalist, who coined the term "agnostic" and whom Engels undoubtedly has in mind, more than anyone else, when he speaks of English agnosticism. Such types of agnostics were in 1891 called by Engels "shamefaced materialists." James Ward, the English spiritualist, in his book, *Naturalism and Agnosticism*, in which he chiefly attacks the "scientific leader of agnosticism," Huxley (Vol. II, p. 31), confirms Engels' estimate when he says: "In Huxley's case indeed the leaning towards the primacy of the physical side ["series of elements" with Mach] is often so pronounced that it can hardly be called parallelism at all. In spite

[15] Henri Delacroix: *Bibliothéque du congréss international de la philosophie, David Hume et la philosophie critique*, Vol. IV. The author refers to the adherents of Hume, Avenarius and the adherents of the immanentist school in Germany, and Renouvier and his School (*neo-criticists*) in France.

of his vehement repudiation of the title materialist as an affront to his untarnished agnosticism, I know of few recent writers who on occasion better deserve the title." [16]

And Ward quotes a passage from Huxley to confirm his opinion. "Any one who is acquainted with the history of science will admit, that its progress has, in all ages, meant, and now more than ever means, the extension of the province of what we call matter and causation and the concomitant gradual banishment from all regions of human thought of what we call spirit and spontaneity." Or: "It is in itself of little moment whether we express the phenomena of matter in terms of spirit, or the phenomena of spirit in terms of matter—each statement has a certain relative truth. But with a view to the progress of science, the materialistic terminology is in every way to be preferred. For it connects thought with the other phenomena of the universe . . . whereas, the alternative, or spiritualistic terminology is utterly barren, and leads to nothing but obscurity and confusion of ideas. Thus there can be little doubt, that the further science advances, the more extensively and consistently will all the phenomena of Nature be represented by materialistic formulæ and symbols" (pp. 17-19).

That is how the "shamefaced materialist" Huxley argued, refusing to accept materialism which he regards as "metaphysics," for it illegitimately goes beyond "groups of sensations." And the same Huxley wrote: "If I were obliged to choose between absolute materialism and absolute idealism I should feel compelled to accept the latter alternative [p. 216]. . . . Our one certainty is the existence of the mental world" (p. 219).

The philosophy of Huxley is also a mixture of Hume and Berkeley, as is the philosophy of Mach: but in Huxley's case the Berkeleian passages are rare, and agnosticism is the fig-leaf of materialism. With Mach the "colouring" of the mixture is a different one and the same spiritualist, Ward, bitterly fighting Huxley, good-naturedly pats the shoulder of Avenarius and Mach.

3. *The Immanentists as Associates of Mach and Avenarius*

In speaking of empirio-criticism we can not avoid reference to the philosophers of the so-called immanentist school, the chief representatives of which are Schuppe, Leclair, Rehmke, and Schubert-

[16] James Ward: *Naturalism and Agnosticism*, London, 1899, p. 31.

Soldern. It is essential, therefore, to examine the relation of empirio-criticism to the philosophy of immanence especially as preached by the last-named.

In 1902 Mach wrote the following in the introduction to the fourth edition of the *Analysis of Sensations*:

"To-day I see that a host of positivistic philosophers, critical empiricists, adherents of the philosophy of immanence, and certain isolated scientists as well, have all, without any knowledge of one another's work, entered upon paths which, in spite of all their individual differences, converge almost towards one point" (p. 13). Here we must first note Mach's truthful statement that very few naturalists belong to the adherents of the supposedly "new" (in truth very old) school of the Humean-Berkeleian philosophy. Secondly, Mach's view of this "new" philosophy, as a broad movement, in which the philosophers of the immanentist school are on a par with the empirio-criticists and the positivists, is important. "Thus there opens one common movement." [17] "My position, moreover, borders closely on that of the representatives of the philosophy of immanence. . . . This is especially true in the case of Schuppe with whose writings I became acquainted in 1902; his *Outline of the Theory of Knowledge and Logic*, a work which is packed with thought and which can be read without a special dictionary, struck a particularly sympathetic chord in me" (*ibid.*, p. 46). Schubert-Soldern also "struck a sympathetic chord" in Mach, and to Wilhelm Schuppe he dedicates his last and conclusive philosophic work, *Erkenntnis und Irrtum.*

Avenarius, another founder of empirio-criticism, wrote in 1894 that he is "rejoiced" and "encouraged" by the sympathy of Schuppe with empirio-criticism, and that the differences between him and Schuppe "exist, perhaps, only temporarily." [18] And, finally, Petzoldt, whose teaching Lessevich regards as the last word in empirio-criticism, openly acclaims the trio—Schuppe, Mach and Avenarius—as the leaders of the "new" movement.[19] On this point Petzoldt is definitely opposed to Willy,[20] perhaps the most outstanding of those Machians who felt ashamed of such a kinship as Schuppe's and tried to shield himself against him, for which he was reprimanded

[17] *Analysis*, etc., p. 4, preface to the Russian edition.

[18] *Vierteljahrsschrift für wissenschaftliche Philosophie*, 1894, 18 Jahrg. p. 29.

[19] *Einführung in der Philosophie der reinen Erfahrung*, 1904, Vol. II, p. 295; *Die Weltproblem*, 1906, pp. v and 146.

[20] *Einführung*, etc., Vol. I, p. 321.

by his dear teacher, Avenarius. Avenarius wrote the aforementioned words about Schuppe in his note to Willy's article against Schuppe, adding that the criticism of Willy "was put more strongly than it should have been." [21]

Having acquainted ourselves with the empirio-criticists' estimate of the representatives of the doctrine of immanence, we shall proceed with the latter's estimate of the empirio-criticists. We have already spoken of Leclair's opinion of 1879. Schubert-Soldern in 1882 expresses his partial agreement "with the older Fichte" (that is, the distinguished representative of subjective idealism, Johann Gottlieb Fichte, whose son was as philosophically inept, as the son of Joseph Dietzgen), and "with Schuppe, Leclair, Avenarius and partly Rehmke," while Mach is cited with special pleasure as being opposed to "naturo-historical metaphysics" [22]—an expression which the reactionary instructors and professors in Germany apply to naturo-historical materialism. In 1893 after the issue of Avenarius' *Menschliche Weltbegriff*, Schuppe greeted this work in an open letter to Avenarius as the "confirmation of naïve realism" defended by Schuppe himself. "My conception of the understanding," Schuppe wrote, "is in agreement with your pure experience." [23] Then in 1896, Schubert-Soldern gave an account of the "methodological tendency in philosophy" on which he "leans," one which is derived from Berkeley and Hume and which has descended through Lange ("the beginnings of our movement in Germany date from Lange") and then through Laas, Schuppe, *et al.*, Avenarius and Mach; through the Neo-Kantians, Riehl and Renouvier, the Frenchman, etc.[24] And finally in the preface to the platform, printed in the first issue of the special philosophic organ of the followers of the immanentist school, together with the declaration of war on materialism and with the expression of sympathy to Renouvier, we read: "Even in the camp of the naturalists, there have already been raised voices of individuals in protest against the self-esteem of their colleagues in persisting in the unphilosophic spirit which has penetrated the natural sciences. Such, for example, is Mach. . . .

[21] *Vierteljahrsschrift für wissenschaftliche Philosophie*, 1894, p. 29; Willy's article against Schuppe is also contained therein.

[22] Dr. Richard von Schubert-Soldern: *Ueber Transcendenz des Objects und Subjects*, 1882, p. 37, § 5; *Cf.* his *Grundlagen einer Erkenntnistheorie*, 1884, p. 3.

[23] *Vierteljahrsschrift für wissenschaftliche Philosophie*, 17 Jrg. 1893, p. 384.

[24] Schubert-Soldern: *Das menschliche Glück und die sociale Frage*, 1896, pp. v-vi.

Fresh forces have gathered into motion from all sides and have set to work in order to destroy the blind faith in the infallibility of the natural sciences, have begun to search for new paths in the depths of the mysterious, to search for deeper insights into the realm of truth." [25]

A word must be said about Renouvier. He is the head of the influential school of the so-called neo-criticists in France. His theoretical philosophy is a combination of the phenomenalism of Hume and the apriorism of Kant. The thing-in-itself is absolutely rejected. The connection of phenomena, order and law are declared to be *a priori;* law is written in capital letters and is taken as the basis of religion. The Catholic priests exult over this philosophy. Willy, the Machian, indignantly calls Renouvier the "second apostle Paul," "an obscurantist of the higher school," the "casuistic preacher of freedom of will." [26] The co-thinkers of the immanentists in France warmly greeted the philosophy of Mach. When his *Science of Mechanics* was translated into French, the organ of the Neo-Criticists—*L'Année Philosophique*—edited by Pillon, the collaborator and disciple of Renouvier, wrote: "It is useless to speak of the extent to which, in its criticism of substance, object, thing-in-itself, the positive science of Mach is at one with neo-critical idealism" (Vol. XV, p. 179).

As for the Russian Machians, they are ashamed of their kinship with the representatives of the philosophy of immanence. It is impossible, of course, to expect anything else of people who unconsciously follow the direction of Struve, Menshikov, *et al.* Only Bazarov calls "certain representatives of the immanentist school" "realists." [27] Bogdanov briefly declares that "the immanentist school is only an intermediate form between Kantianism and empirio-criticism," an interpretation that is quite wrong.[28] Chernov writes: "Generally speaking, the immanentists approach positivism in only one aspect of their theory, in the other aspects they go far beyond it." [29] Valentinov says that the "immanentists wrapped up these (Machian) thoughts in a useless form and fell into the

[25] *Zeitschrift für immanente Philosophie*, Berlin, 1896, Vol. I, pp. 6, 9.

[26] *Gegen die Schulweisheit*, p. 129.

[27] "Realists in modern philosophy—some representatives of the immanentist school, who derive their origin from Kantianism, the school of Mach-Avenarius and other movements akin to them find that there are no grounds whatsoever to reject the starting point of naïve realism" (*Outlines*, p. 26).

[28] *Empirio-Monism*, Book III, p. xii.

[29] *Philosophical and Sociological Studies*, p. 37 (in Russian).

solipsistic impasse" (*op cit.*, p. 149). As you see nothing lacks there —here is realism and solipsism in one swoop. Our Machians are simply afraid to state the truth about them openly and frankly.

The truth of the matter is that the adherents of that school are the most sworn reactionaries, open preachers of theism, unadulterated in their obscurantism. There is not one of them who would not undertake to defend religion in the field of epistemology, or come forward with an apology for one kind or another of mediævalism. Leclair, in 1879, defends his philosophy as satisfying "all the needs of a religiously inclined person." [30] Rehmke in 1880 dedicated his *Theory of Knowledge* to the Protestant pastor, Biedermann, and closes his book with a sermon not on God as supernatural, but on God as a "real conception" (is this why Bazarov ranged "certain" followers of the philosophy of immanence amongst the "realists"?), while the "objectification of this real conception is posited and solved by practical life," while Biedermann's *Christian Dogmatism* is declared to be the standard of "scientific theology." [31] Schuppe insists that though the immanentists deny transcendentalism, yet the concept of transcendentalism does not necessarily include God and immortality.[32] In his *Ethics* he defends the "connection of the moral law . . . with one's metaphysical outlook," and condemns as a "senseless phrase," separation of the church from the state.[33] Schubert-Soldern in his *Foundations of the Theory of Knowledge* deduces both the pre-existence of the self and its after-existence in relation to the body, thus defending the immortality of the soul (p. 82). In *Die sociale Frage* he defends, in opposition to Bebel, suffrage based on class privilege together with other "social reforms," and says that the "social-democrats ignore the fact that without the divine gift—of misfortune—there would be no happiness" (p. 330), and at this point laments the fact that "materialism dominates" (p. 242); that "he who in our time believes in the hereafter, or even in its possibility, is considered a fool" (*ibid.*).

And these German Menshikovs, obscurantists of no lesser calibre than Renouvier, live peacefully side by side with the empirio-criticists. Their theoretical kinship is incontestable. There is no more of Kantianism in the philosophy of immanence than in that of

[30] *Der Realismus*, etc., p. 73.
[31] Rehmke: *Die Welt als Wahrnehmung und Begriff*, Berlin, 1880, p. 312.
[32] *Zeitschrift für immanente Philosophie*, Vol. II, p. 52.
[33] Wilhelm Schuppe: *Grundzüge der Ethik und Rechtsphilosophie*, Breslau, 1881, pp. 181, 325.

Petzoldt or Pearson. We have seen that they look upon themselves as disciples of Hume and Berkeley, an opinion which is generally entertained in philosophic literature. To illustrate what the epistemological assumptions of the associates of Mach and Avenarius are, we shall quote from some of the works of immanentists.

In 1879 Leclair had not as yet invented the name "immanent," which signifies "empirical," and which is just as deceiving a label to conceal corruption as are the labels and slogans of the European bourgeois parties. In his first work, Leclair frankly and explicitly calls himself a "critical idealist.[84] Kant is there criticised, as we have already seen, for his concessions to materialism, and Leclair there definitely points out the path he himself has taken from Kant to Fichte and Berkeley. Leclair fights against materialism in general and against the leanings toward materialism displayed by the majority of scientists. So do Schuppe, Schubert-Soldern and Rehmke.

He says: "Let us return to the standpoint of critical idealism, let us not attribute any transcendental existence to the processes of nature or to nature as a whole [that is an existence beyond human consciousness]. The aggregate of bodies and the subject's own body, in so far as he sees and feels it together with its changes, will then appear as the immediate presentation of spatially connected co-existences and successions in time, and the whole explanation of nature will reduce itself to stating the laws of these co-existences and successions" (p. 21).

Back to Kant! said the reactionary Neo-Kantians. Back to Fichte and Berkeley! is what the demand of the reactionary immanentists can be reduced to. For Leclair, existence and the "complex of sensations" are identical (p. 38); these properties which act on our sense-organs are indicated by him with the letter M, those acting on other natural objects, with the letter N (pp. 150 *ff*). He speaks of nature as the "phenomenon of the consciousness not of a single person, but of mankind" (p. 55). If we take into consideration the fact that Leclair issued his book in Prague, the very same city where Mach was professor of physics, and that Leclair gladly cites only *Die Erhaltung der Arbeit* of Mach which appeared in 1872, an inevitable question arises: ought we not regard the adherent of fideism and the open idealist, Leclair, as the actual sponsor of the "original" philosophy of Mach?

[84] *Der Realismus*, etc., pp. 11, 21, 206 *ff*.

As for Schuppe, who, according to Leclair,[35] reached "similar results," he, as we have seen, pretends to defend "naïve realism"; and in the *Open Letter to Avenarius* he complains of the "established perversion of my [Schuppe's] theory of knowledge into subjective idealism." The substance of the crude guile, which is called by Schuppe the defence of realism, is sufficiently obvious from his rejoinder to Wundt, who without hesitation had classified the immanentists with the Fichteans and the subjective idealists.[36]

"In my case," Schuppe retorts to Wundt, "the proposition that 'existence is consciousness' implies that consciousness without the external world is inconceivable; that, consequently, the latter belongs to the former and presupposes the absolute connection (*Zusammengehörigkeit*) of both, a fact which has been noted and explained by me many times; in this connection both constitute the unitary, and primeval whole of existence." [37]

One must be extremely naïve not to notice the unadulterated subjective idealism in such "realism"! Just think of it, the external world "belongs to consciousness" and is in absolute connection with it! Indeed, the poor professor was slandered when he was classified with the subjective idealists. Such philosophy fully coincides with the "essential co-ordination" of Avenarius; no attempted justifications and protests on the part of Chernov and Valentinov can separate them; both philosophies are destined to find their way into the museum of the reactionary exhibits manufactured by the German professordom. As a curiosity testifying to Valentinov's limitations, note that he calls Schuppe a solipsist (it is obvious, that Schuppe insists just as strenuously that he is not a solipsist, and has written special articles on this subject, as have Mach, Petzoldt, *et al.*), and is highly pleased with Bazarov's article in the *Outlines!* I should like to translate into German the following utterance of Bazarov's, "The reality existing outside of us is sense-perception," and forward it to some reasonable follower of the immanentist school. He would embrace Bazarov just as heartily as the Schuppes, Leclairs and Schubert-Solderns have embraced Mach and Avenarius. For the utterance of Bazarov is the *alpha* and *omega* of the doctrines of the immanentist school.

[35] *Beitrage zu einer monistischen Erkenntnistheorie,* Breslau, 1882, p. 10.

[36] *Philosophische Studien, loc. cit.,* pp. 386, 397, 407.

[37] Wilhelm Schuppe: "Die immanente Philosophie und Wilhelm Wundt," *Zeitschrift für immanente Philosophie,* Vol. II, p. 195.

Here is, finally, Schubert-Soldern: "The materialism of natural science," the "metaphysics" implicit in the recognition of the objectivity of the external world, is the chief enemy of this philosopher.[38] "Natural science abstracts from all relations of consciousness" (p. 52)—this is its chief defect (for it is the substance of materialism)—"since the individual cannot escape from his sensations and, hence, from a state of consciousness" (pp. 33, 34). Of course, Schubert-Soldern admitted in 1896, "My viewpoint is epistemological solipsism," [39] but it is neither "metaphysical" nor "practical." "What we experience immediately is a sensation or a complex of constantly changing sensations." [40]

"Marx accepted the material process of production," says Schubert-Soldern, "as the cause of inner processes and motivations in the same way (and just as falsely) as natural science accepts the general [to humanity] external world as the cause of the individual inner world." [41] About the connection of the historical materialism of Marx with natural, historical and philosophical materialism in general, Mach's associate has no doubt at all.

"Many, perhaps even the majority, will be of the opinion that from the standpoint of epistemological solipsism no metaphysics is possible at all, that metaphysics is really transcendental. Upon more thorough reflection I cannot hold this opinion. Here are my proofs. . . . The immediate foundation of experience is a spiritual (solipsist) connection, the central point of which is the Self (the individual realm of presentations) with its body. The rest of the world is inconceivable without this Self, and this Self is inconceivable without the rest of the world; therefore it follows that with the destruction of the individual Self the world would be destroyed. But this is impossible. Were the world destroyed there would remain no place for the individual Self, for the latter can be separated from the world only logically, but not in time and space. Therefore my individual Self must inevitably exist after my death also, since the entire world cannot be annihilated with it at the same time" (*ibid.*, p. xxiii).

"Essential co-ordination," "complexes of sensation" and the rest

[38] *Die Grundlage der Wissenschaftstheorie*, 1884, p. 31, Ch. II; *Die Metaphysik der Naturwissenschaft.*

[39] *Sociale Frage*, p. x.

[40] *Ueber Transcendenz des Objects und Subjects*, p. 73.

[41] *Sociale Frage*, p. xviii.

of the Machian effusion stand those who have need of them in good stead!

". . . What represents 'the beyond' from the point of view of solipsism? It is the possibility of a future experience [*ibid.*]. . . . Of course, spiritualism, for example, has not proven the existence of a hereafter, but neither can the materialism of natural science be advanced against spiritualism, for this materialism, as we have seen, is only one side of the world process ['essential co-ordination'] within an all embracing spiritual connection" (p. xxiv).

All this is said in the same philosophic introduction to the *Sociale Frage* (1896), in which Schubert-Soldern expresses his constant agreement with Mach and Avenarius. Only in the case of the Russian Machians does Machism serve exclusively for intellectual prattle, but in its own country its rôle as a flunkey to theism is openly proclaimed!

4. *In What Direction Is Empirio-Criticism Developing?*

Let us cast a glance at the development of Machism subsequent to Mach and Avenarius. It has been shown that their philosophy is a mass of contradictory and disconnected epistemologic propositions. Now we must seek the direction in which this philosophy is developing; this will help us to decide certain "debatable" issues by referring to certain "undebatable" historical facts. Indeed, in discussing the eclecticism and incoherence of the philosophic point of departure of this school, varying interpretations and sterile arguments concerning detail are inevitable. But empirio-criticism, like every ideological movement, is a living thing, which grows and develops, and the fact of its growth in one direction or another, can help us to solve better than long discourses, the basic question as to what the real essence of this philosophy is. We usually judge a person not from the way he thinks or speaks of himself but from the way he behaves. We must judge philosophers, too, not by the labels they bear ("positivism," "pure experience," "monism," or "empirio-monism," "naturalism," etc.), but according to their answers to the fundamental questions, who their associates are, what they generally teach and what they have imparted to their disciples and followers.

It is the last question especially which interests us now. Their most essential doctrines were already laid down by Mach and

Avenarius about twenty years ago. During that time the question had to be answered as to how "the leaders" were to be understood by those who wanted to understand them, and whom they themselves (at least Mach who outlived his colleague) considered as successors and followers. To be exact, let us take those who regard themselves as disciples, or adherents, of Mach and Avenarius, and whom Mach himself recognises as such. We shall thus get a picture of empirio-criticism as a philosophic movement, and not as a mere collection of literary cases.

In the introduction to the Russian edition of the *Analysis of Sensations* Mach recommends Hans Cornelius as a "young investigator" who has taken "if not the same position as Mach, then at least one bordering closely upon it" (p. 4). In the text of the *Analysis of Sensations* Mach once again "with pleasure points to the works" of Cornelius and others "who have propounded the essence of Avenarius' ideas and who have developed them still further" (p. 40). In Cornelius' *Einleitung in die Philosophie,* we see that its author also expresses his intentions of following in the footsteps of Mach and Avenarius (pp. viii, 32). We have before us then a disciple who has been acknowledged as such by his teacher. This disciple also begins with the elements of sensation (pp. 17, 42), and categorically declares that he has confined himself to experience (p. vi), and calls his views "consistent or epistemological empiricism" (p. 335). He definitely condemns the "one-sidedness" of idealism and the "dogmatism" of both the idealists and materialists (p. 129); he energetically denies (p. 123) that from his philosophy there necessarily follows the "misunderstanding" that the world exists in the mind of man, and flirts with naïve realism no less dexterously than do Avenarius, Schuppe or Bazarov ("the visual as well as everything else given in perception has its locus where we find it, that is to say, where the naïve mind, untouched by a false philosophy, localises it," p. 125), and yet, the disciple, recognised by his teacher, arrives at immortality and God. Materialism, shouts this police officer in a professorial chair,—this disciple of "recent positivism,"—materialism converts man into an automaton. "There is no question that together with the disappearance of the belief in freedom of the will, moral validity and responsibility for our deeds also disappears; materialism leaves no room for the idea of the continuity of life after death" (p. 116). The final note of the book is that education (of the youth duped

by this man of science) is necessary not so much for a life of activity as "primarily to implant veneration (*Ehrfurcht*),—not for the temporal values of the transitory tradition, but for the imperishable values of duty and beauty, for the divine in us and beyond us" (p. 358).

Compare with this Bogdanov's assertion that "there is no room and there cannot be any room" for the ideas of God, freedom of the will and immortality of the soul in the philosophy of Mach, since the latter denies the "thing-in-itself."[42] And Mach in the same book (p. 293) declares that "there is no Machian philosophy" and recommends not only the immanentists but Cornelius as well, as the ones who have revealed the essence of Avenarius' ideas. In the first place, Bogdanov himself is not acquainted with the development of the "Machian philosophy"—does not know that it not only nestles under the wing of theism but actually embraces it. In the second place, Bogdanov does not know the history of philosophy, for to tie up the denial of these ideas with a denial of the thing-in-itself, is to mock at the history of philosophy. Would Bogdanov deny that consistent adherents of Hume, who have rejected the thing-in-itself, still leave room for those ideas? Has he never heard of the subjective idealists who reject the thing-in-itself and yet leave room for these ideas? "There can be no room" whatsoever for these ideas—indeed—but in a philosophy which denies that perception constitutes the sole reality, which teaches that the world is matter in motion; that the external world, with which we are so familiar, is the only objective reality;—indeed—in the philosophy of materialism! It is precisely because of this that materialism is combated by the immanentists who have received the recommendation of Mach and his disciple Cornelius, as well as by the entire professorial philosophy.

Our Machians begin to reject Cornelius only when this indecency is pointed out to them. Rejections of this kind are worth very little. Friedrich Adler, evidently not having been warned beforehand, recommends the same Cornelius in the socialist journal *Der Kampf* (1908, No. 5, p. 235), and writes that "this work is easy to read and deserves high recommendation." Through the medium of Machism, philosophic reactionaries and preachers of theism are imported as teachers of the workers.

[42] *Analysis of Sensations*, p. xii.

Petzoldt detects Cornelius' falsehood without having been told about it; but his method of attack is a masterpiece. Here is what he says: "The assertion that the world is idea [as those idealists whom we combat (!) assert] has sense only when one wishes to say that it is the idea of the one who makes the assertion or of all those who make such assertion, when it implies that the world depends for its existence exclusively upon the thinking of that individual or of those individuals: when it means that the world exists insofar as some person thinks about it, and that the world does not exist when that person does not think about it. We, on the contrary, make the world depend, not on the thinking of a separate individual or individuals, or even better and clearer, not upon the act of thinking, not upon actual thinking, but upon thinking in general and upon exclusively logical thinking at that. The idealist confuses one with the other, and as result we get the agnostic 'semi-solipsism' which we see in Cornelius." [43]

Stolypin denied the existence of black cabinets! [44] Petzoldt totally destroyed the idealists; but it is surprising that this destruction of idealism turns out to be advice as to how to conceal their idealism in as cunning a manner as possible. To say that the world depends upon man's reason is to pervert idealism, but to say that the world depends upon reason in general, is the "most recent" positivism, is critical realism, is—in a word,—thoroughgoing bourgeois charlatanism! If Cornelius is an agnostic semi-solipsist, then Petzoldt is a solipsistic semi-agnostic. Gentlemen, you are crushing fleas!

Let us proceed. In the second edition of his *Erkenntnis und Irrtum*, Mach says that "systematic exposition of my views, to the essence of which I can subscribe, is given by Professor Dr. Hans Kleinpeter." [45] We are taking Hans as exhibit number two. This professor is a certified propagator of Machism; he has

[43] *Einführung*, etc., Vol. II, p. 317.

[44] Stolypin, P. A. (1862-1911). Prime Minister of Russia from 1907 to 1911; mainstay of reaction and most hated of Tsarist officials; notorious for his fiendish persecution of the revolutionary movement; dissolved the Second *Duma* in 1907 and changed the Constitution which limited to some extent the powers of the Tsar; assassinated in Kiev in 1911; "Black Cabinet" (*Cabinet noir*), an office created in France during the reign of Louis XV, where letters of suspected persons were opened and read by officials before being forwarded to their destination.—*Ed.*

[45] *Die Erkenntnistheorie der Naturforschung der Gegenwart*, Leipzig, 1905.

penned a number of articles on the views of Mach in special philosophic journals in German and English, has translated works recommended by Mach who has written introductions to them—in short, he is the right-hand man of the "teacher." Here are his views:

"All my (outer and inner) experience, all my reason and my endeavours are given to me as a psychical process, as a part of my mind (p. 18). . . . That which we call physical is a construction out of psychic elements (p. 144). . . . *Subjective conviction and not objective certainty* (*Gewissheit*) *is the only goal which can be attained by any science*" [p. 9; the emphasis is Kleinpeter's. He adds the following remark: "This was practically said by Kant in the *Kritik der Praktischen Vernunft*"]. . . . The positing of other minds is one which can never be confirmed by experience (p. 43). . . . I do not know . . . whether there exist other selves in general outside of myself" (p. 43). § 5 is entitled: "On the Spontaneity of Consciousness." In the case of the animal-automaton changes in representations occur in a purely mechanical way. It is the same with us when we have reveries. "In spontaneity lies the essential quality of normal consciousness. It is a property which those automata lack. To explain the spontaneity of personality mechanically or automatically would be, to say the least, very difficult. Every person can make a distinction between himself and his states of consciousness; he can control them, can make them focal or marginal, can analyse and compare them, etc. All this is a fact of (immediate) experience. Our Self is essentially different from the sum-total of all psychical states and cannot be compared with the mere sum. Sugar consists of carbon, hydrogen and oxygen; if we attribute a soul to it, then by analogy it would have to possess the faculty of spontaneously directing the movement of the particles of hydrogen, oxygen and carbon" (pp. 29-30). § 4 of the following chapter is headed: "The act of Consciousness is a Volitional Act (*Willenshandlung*)." . . . "We must regard as a well-established fact the division of all psychical experience into two basic groups: those of spontaneous acts and those of necessary acts. To the first belong the impressions of the external world (p. 47). . . . That it is possible to advance many theories about the same set of facts, is so well known among physicists that it becomes clearly inadmissible to hold the hypothesis that there can be an absolute theory of knowledge. And this fact is bound up with the volitional

character of our reason, implying in turn that our volition is not compelled by external circumstances" (p. 50).

Judge now of Bogdanov's brave pronouncement that "there is no room in Mach's philosophy for the freedom of the will," when Mach himself recommends such a person as Kleinpeter! We have already seen that the latter conceals neither his own idealism nor Mach's. In 1898-9 Kleinpeter wrote: "Hertz discloses as subjective a view on the nature of our conception as Mach. . . . If Mach and Hertz [with what justice Kleinpeter here invokes the famous physicist we shall soon see] deserve credit, from the point of view of idealism, for having emphasised the subjective origin and connection of *all* our concepts and not only of certain individual ones, then from the standpoint of empiricism they deserve no less credit, for having acknowledged that only experience can solve the problem, for example, of the truth of ideas, independently of their being entertained in our mind." [46] In 1900 he wrote: "In spite of the fact that Mach differs from Kant and Berkeley, they appeal to him more than the metaphysical empiricism prevailing in natural science." (That is materialism; the professor does not wish to call the devil by name.) In 1903 he wrote: "The starting point of Berkeley and Mach is irrefutable. . . . Mach completed what Kant began." [47]

In the introduction to the Russian edition of *Analysis of Sensations,* Mach says that Ziehen "follows him, if not exactly, at least very closely." We see from the introduction of Professor Ziehen's book,[48] that he refers to Mach, Avenarius, Schuppe, and so forth. Here again is a case of a disciple asknowledged by the teacher. The "modern" theory of Ziehen is that only the "common populace" can suppose that "real objects are the cause of our sensations" (p. 3), and that for the "foundation of the theory of knowledge there can be no other proposition, than the words of Berkeley: "external objects do not exist in themselves but in our minds" (p. 5). "We experience sensations and ideas. Both are mental. Non-mental is a word devoid of meaning" (p. 100). The laws of nature are relations not of material bodies but of "reduced sensations" (p. 104). In this expression the whole originality of Ziehen's Berkeleianism consists. Petzoldt rejected Ziehen as an

[46] *Archiv für systematische Philosophie,* 1898-99; Vol. V, pp. 167-170.
[47] *Kantstudien,* 1903, Vol. VIII, pp. 274, 314.
[48] *Psycho-Physiologische Erkenntnistheorie,* Jena, 1898.

idealist as far back as 1904 in the second volume of his *Einführung*, etc. (pp. 298-301). In 1906 he put Cornelius, Kleinpeter, Ziehen and Verworn on the list of idealists or psychical monists.[49] In the case of all these professors, as you see, there is a gross "misunderstanding" in their interpretations of the "views of Mach and Avenarius" (*ibid.*).

Poor Mach and Avenarius! Not only are they slandered by their enemies for being idealists and, to use Bogdanov's own expression, accused of being "even solipsists," but their very friends, disciples, adherents, expert professors also mistake them for idealists. If empirio-criticism develops into idealism, that does not at all establish the basic falsehood of its confused Berkeleian hypothesis. Oh, no! that is only an insignificant "misunderstanding" in the Nozdriov [50]-Petzoldt sense of the word.

The most amusing of all is that Petzoldt, the guardian of empirio-critical purity and innocence, first "supplemented" Mach and Avenarius with a "logical *a priori*" and then connected them with Wilhelm Schuppe, the propounder of fideism.

Had Petzoldt known the English adherents of Mach, the list of those Machians who relapsed into idealism (because of the "misunderstanding") would have been greatly increased. We have already cited as an unadulterated idealist, Karl Pearson, who is praised by Mach. Here are the opinions of two "slanderers" who assert the same thing: "The teaching of Professor Pearson is a mere echo of the truly great teaching of Berkeley." [51] "That Mr. Pearson is an idealist in the full sense of the word, there can be no doubt." [52] We would have to consider Clifford, the English idealist, whom Mach regards as "bordering very closely" upon his philosophy [53] as a teacher rather than as a disciple of Mach, for the philosophic works of Clifford appeared in the seventies. The "misunderstanding" is due here to Mach himself, who in 1901 "failed to notice" any idealism in Clifford's doctrine that the world is constituted of "mind-stuff," that it is a "social object," a "highly organised

[49] *Das Weltproblem*, etc., p. 137, note.

[50] A character in Gogol's novel *Dead Souls*. An unusual liar, rogue and intriguer; he was frequently beaten for cheating, but never took matters to heart; to blackmail even a friend was an ordinary thing for him, and he "bore no grudge against that person."—*Ed.*

[51] Howard Knox: *Mind*, 1897, Vol. VI, p. 205.

[52] Rodier: *Revue philosophique*, 1888, II, Vol. 26, p. 200.

[53] *Analysis of Sensations*, p. 8.

experience," etc.[54] In order to characterise the charlatanism of the German Machians it is sufficient to note that Kleinpeter, in 1905, introduces this idealist into the ranks of the founders of the "epistemology of modern natural science"!

On page 356 of the *Analysis of Sensation* Mach mentions the American philosopher, Paul Carus, who "tends" toward both Buddhism and Machism. Carus, who regards himself as an "adherent and personal friend" of Mach, edits in Chicago the *Monist*, devoted to philosophy, and *The Open Court*, a small journal dedicated to the propagation of religion. "The object of *The Open Court* is to establish religion on the basis of Science, and in connection therewith it will present the Monistic philosophy. The founder of this journal believes this will furnish a religion which embraces all that is true and good in religion." [55]

Mach is a permanent contributor to *The Monist*, and publishes his latest views in it. Carus corrects Mach "a little" from the Kantian viewpoint, declaring that Mach "is an idealist or, as I would say, a subjectivist. . . . There are, no doubt, differences between Mach's views and mine, yet I at once recognised in him a kindred spirit." [56] Our monism, says Carus, "is not materialistic, not spiritualistic, not agnostic; it merely means consistency . . . it takes experience as its basis and employs as method the systematic forms of the relations of experience" (evidently a plagiarism from *Empirio-Monism* of Bogdanov!). Carus' slogan is not agnosticism, but positive science, not mysticism, but clear thinking, not supernaturalism, not materialism but a monistic aspect of the world, not a dogma, but religion, not creed, but faith. And to fulfil this slogan Carus preaches a "new theology, theonomy, as being a general science in contrast to the old theology which was based upon erratic notions, guesses, and prophetic dreams." [57] We ought to remark that Kleinpeter in his book on the epistemological foundations of modern science, cited above, recommends Carus together with Ostwald, Avenarius and the immanentists (pp. 151-2). When Haeckel issued his programme for a union of the monists, Carus opposed him on the ground that, first, Haeckel vainly attempts

[54] W. K. Clifford: *Lectures and Essays*, 3d ed., London, 1901, Vol. II, pp. 55, 58, 65, 69: "I am for Berkeley against Spencer", p. 58: "The object is a series of changes in my mind, and not something outside of it" (p. 52).

[55] *The Open Court*, 1887, Vol. I, p. 15.

[56] *The Monist*, Chicago, Vol. XVI, p. 332.

[57] *Ibid.*, Vol. XIII, p. 27.

to refute apriorism which is "consistent with scientific philosophy"; second, that Ernst Haeckel's doctrine of determinism "excludes the possibility of the freedom of the will"; third, that Haeckel is mistaken "in emphasising the one-sided view of the naturalist against the traditional conservatism of the churches. He therefore appears as an enemy to the existing churches instead of rejoicing at their higher development through a new and truer interpretation of their dogmas." [58] Carus himself admits that "I appear reactionary to many freethinkers who blame me for not joining their chorus in denouncing all religion as superstition" (p. 355).

It is evident that we have before us a leader of a company of American literary sharpers who are engaged in drugging the people with religious opium. Mach and Kleinpeter have also become members of the company, by virtue of a little "misunderstanding."

5. *Bogdanov's Empirio-Monism*

"So far as I am aware there is only one empirio-monist in philosophic literature—a certain Bogdanov," writes Bogdanov of himself. "Since I know him very well, I can certify that his views fully accord with the sacred formula of the primacy of the natural over the mental. He regards all existence as a continuous chain of development, the lower links of which are lost in the chaos of primal elements while the higher links, known to us, represent the *experience of men* [Bogdanov's italics]—which is compounded of a highly developed psychical and a still more highly developed physical, experience. This experience and the knowledge of itself which it generates corresponds to what we usually call spirit." [59]

The "sacred" formula Boganov here ridicules is the well-known proposition of Engels which Bogdanov, however, diplomatically evades! He does not differ from Engels, Oh, no!

But let us see how Bogdanov himself summarises this famous "empirio-monism" and "substitution." The physical realm is called the "experience of men" and it is declared as "higher" in the chain of development than the psychical. But this is a crying absurdity, and it is the kind of an absurdity which is characteristic of the typical idealist philosophy. It is rather amusing that Bogdanov

[58] *The Monist,* Vol. XVI, p. 122.
[59] *Empirio-Monism,* Book III, p. xii.

attempts to subsume such a "system" under materialism as if to say: In my case, too, nature is primary and spirit secondary. If Engels' definition is applied in such a way, Hegel will also become a materialist, for in his case, too, psychical experience (under the name of absolute idea) is prior to the physical realm, to nature, and to human knowledge which through natural means discovers the "absolute idea" at the basis of the whole process. Not one idealist would deny the primacy of nature in this sense, for it is no genuine primacy, since here nature is not directly taken as the immediate data, is not taken as the actual starting point of epistemology. Nature in this sense is taken as a product, as an end-term in a long process of abstractions from "psychical" elements. It is immaterial what these abstractions are termed, whether "absolute Idea," "the great Self," "the world Will," etc. These terms distinguish the different *varieties* of idealism, and there are a great number of those varieties. But the substance of idealism can be reduced to this: the mental is taken as the starting-point; from it external nature is inferred or constructed; and in short order the individual consciousness is deduced from nature. This primal "mental" is always in the last analysis a lifeless abstraction which conceals a diluted theology. For instance, everybody knows what a human idea is, but an idea prior to the existence of man, an idea independent of man, an idea in abstraction, an absolute idea,—is a theological fiction of the idealist Hegel. Everybody is familiar with human sensation, but sensation independent of man, sensation existing before man—is nonsense, a lifeless abstraction, an idealist equivocation. Precisely such an equivocation is performed by Bogdanov, when he creates the following ladder:

(1) The chaos of "elements" [we know that the term "element" implies nothing else save some form of human conception];

(2) The psychical experience of men;

(3) The physical experience of men;

(4) "Knowledge which emerges from it."

There are no sensations (human) without man. That means that the first rung of the ladder is a dead idealist abstraction. Essentially, there are before us not the usual and familiar human sensations, but fictitious sensations, belonging to no one, sensations in general—divine sensations—as human ideas usually become, when once separated from man and man's brain, as for example in the case of Hegel.

The first rung is thus counted out.

The second rung is also to be counted out, for no individual knows the psychical before the physical (and the second rung is higher than the third in Bogdanov's); nor does natural science know it. The physical realm existed before the psychical, for the latter is the highest product of the most highly developed forms of organic matter. Bogdanov's second rung is also a dead abstraction, for it implies thought without brain, human reason separated from man.

Only when we throw overboard the first two rungs can we obtain the world picture which truly corresponds to natural science and materialism. Namely, (1) the physical realm exists independently of human consciousness and existed long before the emergence of man, long before any "human experience"; (2) the psychical, consciousness, etc., is the highest product of highly developed matter, is a function of that complicated bit of matter which is called the human brain.

"The realm of substitution," writes Bogdanov, "coincides with the realm of physical phenomena; for the psychical phenomena we need substitute nothing, for they are immediately given complexes" (p. xxxix).

This is idealism, for the psychical, that is, consciousness, perception, sensation, etc., is taken as the immediate and the physical is inferred from it, and then placed in its stead. The world is the non-ego, created by the ego, said Fichte. The world is absolute Idea, said Hegel. The world is Will, said Schopenhauer. The world is conception and perception, said the immanentist, Rehmke. Being is consciousness, said the immanentist, Schuppe. The psychical is a substitution of the physical, says Bogdanov. One must be blind not to perceive the same idealist form beneath the cloak of these various phrasings.

"Let us ask ourselves the question," writes Bogdanov in Book I of *Empirio-Monism* (pp. 128-29): "What is a living being, for instance, man?" And he answers: "Man is primarily a certain complex of immediate experience." Mark you, "primarily"! "Then, in the further development of experience, man becomes both for himself and for others, a physical body amidst other physical bodies."

This is a whole "complex" of absurdities, useful only to prepare for the deduction of the immortality of the soul or the existence of

God, etc. Man is primarily a complex of immediate experiences and in the course of his further development becomes a physical body! That means that there are "immediate experiences" independently of the physical body, existing prior to the physical body. It is a pity that this magnificent philosophy has not yet found acceptance in our theological seminaries, where such theoretical service would be highly appreciated.

". . . We admitted that physical nature itself is *derived* [Bogdanov's italics] from complexes of immediate characters or elements (in which psychical co-ordination is included); that it is the reflection of complexes that are analogous to them,—complexes of the most complicated type (in the socially-organised experience of living beings)" (p. 146).

A philosophy which teaches that physical nature is derivative, is a clerical philosophy—pure and simple. And its character is not altered in the least even though Bogdanov himself spurns all kinds of religion. Dühring was also an atheist; he even proposed to prohibit religion in his "socialised" order. Nevertheless Engels was absolutely right when he proved that Dühring's "system" could not make ends meet without religion. The same is true of Bogdanov with the essential difference that the quoted passage is not an occasional inconsistency but is the essence of his "empirio-monism" and all its "substitution." If nature is derivative then it is self-evident that it can be derived only from something that is greater, richer, broader, mightier than nature, from something that already exists, for in order for nature to be "derived" from it, it has to exist apart from it. It means that something exists outside of nature, which produces nature. In plain language this is what is meant by God. The idealists continually try to substitute a different name, to make it more abstract, more nebulous, and at the same time, to make it appear more plausible, to bring it nearer to the "psychical," to present it as an "immediate complex," as something immediately experienced which requires no evidence. The absolute idea, the universal spirit, the world will, "the general substitution" of the psychical for the physical, are different formulations of the same idea. Everybody knows that the idea, spirit, will, and the psychical, in general, is the function of a normally operating human brain. It is the specific task of science to investigate the connection. To separate this function from specific structure, organised in a certain way, to convert this function into a universal, general abstraction,

to substitute this abstraction for the whole of physical nature,—is the delusion of an idealism which secretly scorns science.

Materialism says that the "socially organised experience of the living" is derived from physical nature, is a product of long development, is the result of a gradual evolution from a state of physical nature in which there were no such things—nor could there very well be—as sociability or organisation, or experience, or living beings. Idealism says that physical nature is derived from the experience of living beings, and in saying this, idealism gives nature at least the same status as God, if not altogether subordinating it to God. For God himself, according to this theory, is surely derived from the socially organised experience of the living. Turn the philosophy of Bogdanov about as you please, yet you will get nothing but a reactionary muddle.

Bogdanov thinks that to speak of the social organisation of experience is "cognitive socialism" (III, p. xxxiv). This is insane twaddle. If socialism is thus argued, then the Jesuits are ardent adherents of "cognitive socialism," for the starting-point of their epistemology is divinity as the supreme form of "socially organised experience." And it is beyond doubt that Catholicism is a "socially organised experience"; but it reflects not the objective truth,—to which science is faithful but which Bogdanov betrays—but the exploitation of the ignorance of the masses by certain social classes. But why speak of the Jesuits! The "cognitive socialism" of Bogdanov can be wholly found in the doctrine of immanence of which Mach is so fond. Leclair regards nature as the consciousness of "mankind," [60] but not of the individual man. The bourgeois philosophers will give us such Fichtean cognitive socialism to our heart's content. Schuppe also emphasises *das gattungsmässige Moment des Bewusstseins,*[61] that is, the generating element of consciousness. To think that idealism vanishes by substituting the consciousness of mankind for the consciousness of the individual or the experience of "the socially organised" for the experience of one person, is to assume that capitalism will vanish by the substitution of one capitalist for another in a joint stock-company.

Our Russian Machians, Yushkevich and Valentinov, repeat after the materialist Rakhmetov that Bogdanov is an idealist (after hav-

[60] *Der Realismus,* etc., p. 55.

[61] *Cf. Vierteljahrsschrift für Wissenschaftliche Philosophie,* Vol. XVII, pp. 379-80.

ing abused Rakhmetov so brutally). But they could not think from where this idealism is derived. For them it appears that Bogdanov is an individual phenomenon, an accident, something *sui generis*. This is not true. Bogdanov may personally think that he has invented an "original" system, but it is sufficient to compare it with the effusions of the aforementioned disciples of Mach to realise the falsity of such a claim. The difference between Bogdanov and Cornelius is much less than that between Cornelius and Carus. The difference between Bogdanov and Carus is less (in the essential outlines of their philosophical systems, to be sure, and not in the consciousness of the reactionary implications of that system) than that between Carus and Ziehen and so on. Bogdanov is only one of the manifestations of that "socially organised experience" which bears witness to the growth of Machism into idealism. Bogdanov (we here speak exclusively of Bogdanov as a philosopher) could not be born into God's world, if in the doctrines of his teacher Mach there were not the "elements" of Berkeleianism. And I cannot imagine a more "terrible revenge" upon Bogdanov than to have his *Empirio-Monism* translated, say, into German and presented for review to Leclair, Schubert-Soldern, Cornelius, Kleinpeter, Carus and Pillon (the French collaborator and disciple of Renouvier). The compliments of the associates and followers of Mach extended to this new "substitution" would have been much more significant than their argument.

It would hardly be correct to regard the philosophy of Bogdanov as a completed and solidified system. In a span of nine years, from 1899 to 1908, Bogdanov has gone through four stages in his philosophic peregrinations. At the beginning he was a "naturo-historical" materialist (*i. e.*, still half unconsciously and instinctively true to the spirit of science). His *Fundamental Elements of the Historical Outlook on Nature* (in Russian) bears traces of that stage. During the second stage, the later nineties, he was an adherent of the fashionable "energetics" of Ostwald,—a muddled agnosticism, with leanings towards idealism. From Ostwald (on the title page of Ostwald's *Lectures on the Philosophy of Nature* we find that the book is "dedicated to Mach"), Bogdanov went over to Mach, accepting the fundamental hypotheses of subjective idealism, inconsistent and muddled as it is, together with the entire philosophy of Mach. The fourth stage is an attempt to eliminate some of the contradictions of Mach, and to create a semblance of objective ideal-

ism. "The theory of general substitution" shows that Bogdanov has revolved almost in a semi-circle, beginning with his original base. Is this stage of Bogdanov's philosophy more remote from dialectic materialism than the previous ones? If Bogdanov remains in one place, then he is surely more remote from it. If he keeps moving in the same curve as he has done those nine years, then he is closer to materialism. He needs only to make one serious step in order to turn again to materialism—he needs but make a clean sweep of his "universal substitution." This universal substitution has intertwined into one Chinese queue all the transgressions of half-baked idealism, all the weaknesses of consistent subjective idealism, just as the "absolute Idea" of Hegel (*si licet parva componere magnis!*—if it is permissible to compare the great with the small) combined all the contradictions of Kantian idealism and all the weaknesses of Fichteanism. It remained for Feuerbach to make only one serious step in order to reach materialism, namely to throw completely overboard the absolute Idea, this Hegelian "substitution of the psychical for the physical." Feuerbach cut off the Chinese braid of absolute idealism—and took nature without any "substitutions" as the basis.

We shall see later to what lengths the Chinese queue of Machian idealism will grow.

6. *The "Theory of Symbols" (or of Hieroglyphs) and the Criticism of Helmholtz*

In order to complete what has been said above about the idealists, as associates of and successors to empirio-criticism, it is in keeping here to note the character of the Machian criticism of certain philosophic propositions touched upon in our literature. For instance, our Machians, who desire to be Marxians, gladly cavil at the "symbolic representations" of Plekhanov, a theory, according to which the sensations and perceptions of man are not the copy of real things and nature's processes, not their image, but only arbitrary signs and symbols of them. Bazarov ridicules this symbolic (or hieroglyphic) materialism, and he is justified in so doing provided he reject it for a non-symbolic materialism. But Bazarov here again resorts to a trick; he smuggles in a renunciation of materialism in general under the guise of a criticism of "symbolic representation." Engels speaks neither of symbols nor hieroglyphs, but of copies, photographs, images, mirror-reflections of things. Instead

of pointing out Plekhanov's error in deviating from Engels' formulation of materialism, Bazarov obscures the truth of Engels' views for the readers, by making a fuss over Plekhanov's error.

To elucidate both Plekhanov's error and Bazarov's confusion we shall cite Helmholtz, an important representative of the "symbol theory" (calling a symbol a hieroglyph, does not change its meaning), and see how he was roundly criticised by both the materialists, and idealists including the Machians.

Helmholtz, a star of the first magnitude in science, in philosophy was as inconsistent as most contemporary scientists are to-day. He gravitated toward Kantianism, but even in this he was inconsistent. Here are some passages from his *Treatise on Physiological Optics* [62] on the correspondence of ideas with objects: "Thus far the sensations have been described as being simply *symbols* for the relations in the external world" (p. 18). This is agnosticism, but further on we read the following: "Our apperceptions and ideas are *effects* wrought on our nervous system and our consciousness by the objects that are thus apprehended and conceived" (p. 19). This is materialism, but that Helmholtz, judging by his further discussion, makes no clear distinction between the relation of absolute and relative truth, is quite evident. For instance, he says: "In my opinion, therefore, there can be no possible sense in speaking of any other truth of our ideas except of a practical truth. Our ideas of things *cannot* be anything but symbols, natural signs for things which we learn how to use in order to regulate our movements and actions. Having learned correctly how to read those symbols, we are enabled by their help to adjust our actions so as to bring about the desired result . . ." (p. 19). This is not correct. Helmholtz is slipping towards subjectivism, towards a denial of objective reality and objective truth. And he arrives at a flagrant untruth when he ends the sentence with the words: "An idea and the thing of which it is an idea evidently belong to two entirely different worlds." Only the Kantians thus separate idea and reality, mind and nature. However, a little further we read: "In the next place as to the *properties* of objects in the external world, a little reflection reveals that all properties attributable to them may be said to be simply *effects* exerted by them either on our senses or on other natural objects" (p. 20). Here again Helmholtz reverts to the materialist viewpoint. He is an inconsistent Kantian, now recognising the

[62] Edited by J. P. C. Southal, Vol. III, Optical Society of America, 1924.

a priori laws of reason, now tending toward the "transcendental reality" of space and time (*i. e.*, the materialistic conception of them), now inferring human sensations from external objects, which act on our sense-organs, and now declaring sensations to be only symbols, certain arbitrary signs torn from the "quite different" world of signified things.[63]

This is how Helmholtz expressed himself in the speech of 1878 on "The Facts of Perception" ("an important occurrence in the realistic camp," as Leclair characterised it): "Our sensations are but effects wrought by external causes on our organs, and the circumstance of how such effects would manifest themselves, depends, of course, very essentially upon the character of the apparatus on which these effects are wrought. Inasmuch as the quality of our sensation gives us evidence of the properties of the external cause by which this sensation is produced, the sensation can be regarded as its sign [*Zeichen*], but not as its image. Since a certain resemblance with the resembled object is demanded from an image. . . . While from a sign no resemblance is demanded with that of which it is a sign. . . ."[64] If sensations are not images of things but only signs or symbols, which have "no resemblance" to them, then the materialist starting point of Helmholtz is completely undermined; the existence of external objects becomes doubtful, for signs or symbols quite possibly indicate imaginary objects, and everybody is familiar with instances of such signs or symbols. Helmholtz, following Kant, attempts to draw what appears to be an absolute boundary between the "phenomenon" and the "thing-in-itself." He is very much prejudiced against straightforward, clear, and open materialism. But a little further he says: "I do not see how we could refute the system of the most extreme subjective idealism which would choose to regard life as a dream. We could declare it highly improbable and unsatisfactory, I myself would most strenuously object to it, yet it is possible to infer it consistently. . . . The realistic hypothesis, on the contrary, trusts the evidence [*Aussage*] of common self-observation according to which the changes of perception that follow certain actions do not have any psychical connection with the preceding impulse of volition. This hypothesis believes in the existence, independent of our ideas, of everything

[63] *Cf.* Victor Heyfelder: *Ueber den Begriff der Erfahrung bei Helmholtz*, Berlin, 1881.

[64] *Vorträge und Reden*, 1884, Vol. II, p. 226.

that is ascertained by our everyday perception to be part of the material world outside of us" (pp. 238-39). "Undoubtedly, the realistic hypothesis is the simplest hypothesis imaginable; it has been tested and verified in very broad domains of application; it is accurately determined in its integral parts and, therefore, it is in the highest degree useful and fruitful, as a ground of action" (*ibid.*) The agnosticism of Helmholtz, too, resembles "shame-faced materialism," but with a characteristic Kantian failing, which distinguishes it from the characteristic Berkeleian failings of Huxley.

Albrecht Rau, the follower of Feuerbach, therefore very definitely criticises Helmholtz's theory of symbols as an inconsistent deviation from "realism." The basic view of Helmholtz, says Rau, is a realistic hypothesis according to which "we understand the objective properties of things" with the help of our senses.[65] The theory of symbols cannot be reconciled with such a whole-hearted materialism, for it involves distrust in perception, a reluctance to place faith in the evidences of our sense-organs. It is beyond doubt that an image cannot absolutely resemble the model, but one thing is the image, another thing is the symbol, the conventional sign. The image must of necessity presuppose an objective reality which "is reflected." "A conventional sign" and symbol are concepts which bear an absolutely unnecessary trace of agnosticism. Rau, therefore, is perfectly right in saying that by the theory of symbols, Helmholtz pays tribute to Kantianism. "If Helmholtz," says Rau, "had remained true to his realist conception, if he had consistently adhered to the principle that the properties of bodies express relations of bodies amongst themselves and their relations to us, then he probably would not have needed the theory of symbols; he could then say, briefly and clearly 'sensations which are produced in us by objects are reflections of the substance of those objects' " (*ibid.*, p. 320).

Thus is Helmholtz criticised by a materialist. He rejects hieroglyphic or symbolic materialism or the partial materialism of Helmholtz in the name of the consistent materialism of Feuerbach.

The idealist Leclair (the representative of the immanentists dear to Mach's heart and head) also accuses Helmholtz of inconsistency, of hesitation between materialism and spiritualism.[66] But the

[65] Albrecht Rau: *Empfinden und Denken*, Giessen, 1896, p. 304.
[66] *Der Realismus*, etc., p. 154.

theory of symbols is criticised by Leclair not because it lacks traces of materialism but because it suffers from an abundance of such traces. Says Leclair: "Helmholtz assumes that perception gives us sufficient support for our knowledge of succession in time and for our knowledge of the identity or difference of transcendental causes. This is sufficient, in Helmholtz's opinion, to warrant the assumption of uniformity in the realm of the transcendental" (that is in the domain of the objectively real, p. 33). And Leclair denounces this "dogmatic prejudice of Helmholtz." "The Berkeleian God," he exclaims, "in the rôle of the hypothetical cause of the uniformity of ideas in our mind is just as capable of satisfying our need of causal explanation, as is the world of external objects" (p. 34). "A consistent application of the theory of symbols . . . is impossible without a generous admixture of vulgar realism" (that is, *materialism*, p. 35).

That is how a "critical idealist," in 1879, tore into Helmholtz for his materialism. After the lapse of twenty years Kleinpeter, the disciple of Mach, who, we will remember, was highly praised by his teacher, thus refutes the "antiquated" Helmholtz by means of the "modern" philosophy of Mach, in his article on the "Fundamental Views of Mach and Hertz on Physics."[67] Let us leave Hertz (who was just as inconsistent as Helmholtz) for a while, and examine Kleinpeter's comparison of Mach and Helmholtz. Having quoted a series of passages from the works of both writers and accentuated certain statements of Mach, that bodies are mental symbols for complexes of sensations, etc., Kleinpeter says:

"If we follow Helmholtz's trend of thought, we shall find the following fundamental propositions:

"1. There are objects of the external world.

"2. The change of these objects is inconceivable without the action of some cause, which is taken as real.

"3. 'Cause, according to the original meaning of the word, is that which remains unchanged, as remaining or existing behind the changing phenomena, namely, substance and the law of its action, force.' [The quotation is by Kleinpeter from Helmholtz.]

"4. It is possible to infer all the phenomena from the causes in a logically strict and uniquely determined mode.

"5. The attainment of that end is equivalent to the possession of

[67] *Archiv für Philosophie; II Systematische Philosophie*, 1899, Vol. V, pp. 163-64.

objective truth, the acquisition of which is thus recognised as conceivable" (p. 163).

Roused by these propositions, by their contradictions and by the introduction of unsolved problems, Kleinpeter remarks that Helmholtz is not strictly consistent in his views, sometimes employing "a manner of speech, which is suggestive of the purely logical views of Mach in regard to such concepts as matter, force, causality, etc."

"It is not difficult to find the source of our dissatisfaction with Helmholtz, if we recollect the clear and exact words of Mach. The erroneous interpretation of the concepts 'mass,' 'force,' etc., is the basic sin of Helmholtz's argument. These concepts are only our ideas, products of our fancy and do not hold of a reality, existing beyond our reason. We are not at all in a position to know these so-called realities. From the observation of our sense-impressions we are generally not in a position, on account of their imperfection, to make a uniquely determined inference. We can never assert, for instance, that upon reading a certain scale we will obtain a determinate number; it is always possible, within certain limits, to select an infinite number of readings which will be perfectly compatible with the facts of observation. And to have knowledge of something real, lying outside of us,—that is impossible. Let us suppose that it were possible and that we could know reality; we would then have no right to apply the laws of logic to it, for the laws of logic are *our* laws and are applicable only to *our* conceptions, to *our* mental products [Kleinpeter's emphasis]. Between facts there is no logical connection, only mere succession; to utter apodictic assertions of them is unreasonable. Since, therefore, it is incorrect to say that one fact is a cause of another, the whole deduction of Helmholtz and the conceptions based upon it fall to the ground. And finally, the attainment of objective truth, existing independently of the subject, is impossible, not only because of the nature of our sense-organs, but because being men (*als Menschen*) we can have generally no notion as to what exists independently of us" (p. 164).

As the reader sees, our disciple of Mach, repeating the favorite words of his teacher and the words of Bogdanov, who does not consider himself a Machian, refutes the whole philosophy of Helmholtz, refutes it from the idealist viewpoint. The theory of symbols is not emphasised by the idealist who regards it as unimportant, as a merely casual deviation from materialism. And Helmholtz is

taken by Kleinpeter as the representative of the "traditional views of physics, entertained by the majority of physicists" (p. 160).

The upshot of the discussion is this: Plekhanov committed an obvious error in his exposition of materialism; Bazarov blundered completely in confusing materialism with idealism, in contrasting the "theory of symbols" or "symbolic materialism" with the idealistic nonsense, that "sense" perception is the "reality existing outside us." From Helmholtz, the Kantian, as from Kant himself, the materialists broke away to the left, and the Machians to the right.

7. *About the Twofold Criticism of Dühring*

Let us note another characteristic trait in the incredible perversion of materialism by the Machians. Valentinov wishes to discredit Marxians by comparing them to Büchner who supposedly has much in common with Plekhanov, although Engels marked himself off from Büchner. Bogdanov, on the other hand, treats this question as if he were called upon to defend the "materialism of the naturalists," which "is usually spoken of with certain contempt." [68] Both Valentinov and Bogdanov are terribly confused in this matter. Marx and Engels always "spoke contemptuously" of bad socialists, having in mind the doctrines of correct scientific socialism which reflected no fickle departure from socialist to bourgeois views. Marx and Engels always condemned the vulgar, anti-dialectic materialism, but they condemned it from the standpoint of a higher, more advanced dialectic materialism, and not at all from the viewpoint of Humism or Berkeleianism. Marx, Engels and Dietzgen spoke of vulgar materialists, taking account of them in order to correct their errors. Of the Humeans and Berkeleians they did not speak and of Mach and Avenarius they would not have spoken, having satisfied themselves with one contemptuous remark in the general direction of their movement. Therefore, the constant grins and grimaces of our Machians regarding Holbach, Büchner and others, signify nothing but an attempt to throw sand into the eyes of the public, to cover up the fundamental deviation of Machism from the basic tenets of materialism as such, and to avoid taking an outspoken and clear position with regard to Engels.

It is hardly possible to express oneself more clearly on the French materialism of the eighteenth century and on Büchner, Vogt and

[68] *Empirio-Monism,* Bk. III, p. x.

Moleschott, than Engels does at the end of Chapter II of his *Feuerbach*. It is impossible to misunderstand Engels, unless one is intent upon perverting him. "Marx and myself are materialists," says Engels, explaining the basic distinction between all schools of materialism and idealism. And Engels reproaches Feuerbach for his lack of courage and his fickleness, in rejecting materialism somewhere on general grounds, because of the absurdities of a particular school of materialism. Feuerbach "had no right to confuse the teaching of the vulgarised peddlers [Büchner, Moleschott and others] with materialism in general" (p. 69). Only those who have been corrupted through the reading and unquestioned acceptance of the doctrines of the German reactionary philosophers, could have misunderstood the nature of Engels' reproach against Feuerbach. Engels says very clearly that Büchner and the others did not overcome the limitations of their teachers, the materialists of the eighteenth century. For this alone, Engels takes Büchner, *et al.*, to task; not for their materialism, as the ignorant assume, but because they did not promote materialism; that "they did not hitherto think of promoting the theory" of materialism.

For this alone Engels takes Büchner, and the others, to task, and points out the three fundamental "limitations" of the French materialism of the eighteenth century, from which Marx and Engels freed themselves, but from which Büchner and his associates have not. The first limitation lay in the fact that the views of the old materialists were too "mechanical" in the sense that they believed in "the exclusive application of mechanics to processes which are of chemical and organic nature" (p. 66). We shall see in the next chapter how the misapprehension of these words of Engels led some people to lapse into idealism because of the teaching of the new physics. Engels does not reject purely mechanical materialism on the grounds attributed to him by physicists of "recent" idealistic (Machian) tendency. The second limitation can be found in the metaphysical views of the old materialists, that is, the "anti-dialectical tendency of their philosophy." This limitation is shared by Büchner, *et al.*, together with our Machians who were unable, as we have seen, to understand Engels' application of dialectics to epistemology (*e. g.*, concerning absolute and relative truth). The third limitation lies in the preservation of a social idealism "from above," in questions of social character and can be traced to a misapprehension of historical materialism.

Having pointed out and explained these limitations clearly and exhaustively, Engels adds that they (Büchner and the others) "did not by any means escape the limitations of the doctrine."

Only because of these three deficiencies, and exclusively within their limits, does Engels refute the eighteenth century materialism and the doctrines of Büchner! On the other questions, which bear the character of truisms, there is no difference, despite the perversions of the Machians, nor can there be any, between Marx and Engels on the one side, and the rest of the materialists on the other. Only the Russian Machians brought confusion into this perfectly clear question since it is quite evident that for their western-European teachers and co-thinkers, there is a fundamental disagreement between the general views of Mach and his coherts and the basic doctrines of the materialists. Our Machians had first to confuse the question in order to pave the way for a break with Marxism and a desertion to the camp of bourgeois philosophy under the guise of a minor correction of Marxism!

Take Dühring. It is hard to imagine anybody more contemptuous of him than Engels. Still simultaneously with Engels, Leclair criticises the same Dühring, and praises the "revolutionary philosophy" of Mach. For Leclair, Dühring is the "extreme left" of a materialism, which "without evasion declares sensation as well as the phenomena of consciousness and reason in general to be the secretion, function, highest flower, aggregate effect, etc., of the living organism." [69]

Does Engels criticise Dühring for this? No. In this respect he fully agrees with Dühring as with every other materialist. He criticises Dühring from an opposite point of view, namely, for his *inconsistent* materialism, for his idealist idiosyncrasies, which left a loophole for theism.

"Nature itself works in the creature, which has presentations, as well as outside of him; works to produce uniformly connected impressions and to create necessary knowledge about the arrangement of things." Leclair quotes these words of Dühring, attacking in a rage such materialism as "crudest metaphysics," as "delusion," etc., etc. (pp. 160-162).

Does Engels criticise Dühring for this? No. He mocked at all bombast, but in regards to the recognition of the objectivity of na-

[69] *Der Realismus,* etc., 1879, pp. 23-24.

ture, reflected by mind, Engels fully agrees with Dühring as with every other materialist.

"Reason is the highest aspect of the rest of reality. . . . The foundation stone of philosophy lies in the distinction and independence of the material world from the groups of mental phenomena which emerge in this world and which perceive it." Leclair quotes these words of Dühring together with a series of his attacks on Kant, etc., and accuses Dühring on this account of "metaphysics" (pp. 218-222), of subscribing to a "metaphysical dogma," etc.

Does Engels criticise Dühring for this? No. That the world exists independently of the mind and that any deviation from this view on the part of Kantians, Humeans, Berkeleians and so forth is false, Engels is in complete accord with Dühring as with all other materialists. Had Engels seen from what side Leclair, together with Mach, passed criticism upon Dühring, he would have called those philosophic reactionaries by even more contemptuous names than he did Dühring. For Leclair, Dühring was the incarnation of obnoxious realism and materialism.[70] Schuppe, the teacher and associate of Mach, in 1878 accused Dühring of "dream realism" (*Traumrealismus*),[71] in revenge for the word *Traumidealismus*, which Dühring hurled at all the idealists. For Engels on the contrary, Dühring was not a sufficiently consistent and explicit materialist.

Marx, together with Engels and Dietzgen, entered the philosophic arena when materialism reigned in advanced intellectual circles in general, and in workers' circles in particular. It is, therefore, quite natural that they gave attention not to reaffirming well-established principles but to the serious elaboration of materialism in theory and its application to history, that is, to the completion of the edifice at the top. It is quite natural that they limited themselves in the domain of epistemology to correcting Feuerbach's errors, and to ridiculing the vulgarities of the materialist Dühring, to the criticism of Büchner's errors (*see* Dietzgen), to emphasis upon that which the popular (amongst workers) writers especially lacked, namely, the dialectical approach. Marx, Engels, and Dietzgen did not pay much attention to the truisms of materialism, which the vulgarising peddlers repeated in many editions. They tried to see to it that those truisms should not become vulgarised, should not become

[70] *Beiträge zu einer monistischen Erkenntnistheories*, 1882, p. 45.
[71] Dr. Wilhelm Schuppe: *Erkenntnistheoretische Logik*, Bonn, 1878, p. 56.

over-simplified, should not lead to stagnation ("materialism at the bottom, idealism at the top"), should not lead materialists to throw away the valuable kernel of the idealist system—the Hegelian dialectics—that gem which the Büchners and the Dührings (together with Leclair, Mach, Avenarius and others) could not discern in the rubbish of absolute idealism.

By keeping in mind the historical background in which the philosophic works of Engels and Dietzgen were written, one can clearly see why they fenced themselves off from the vulgar materialists instead of joining forces with them. Marx and Engels also fenced themselves off from the vulgarization of the fundamental demands of political democracy, rather than defend them.

Only the disciples of the philosophic reactionaries could "fail to notice" this circumstance, and could present matters to their readers in such a light as to make it appear that Marx and Engels did not understand what it means to be a materialist.

8. *How Could Dietzgen Please the Reactionary Philosophers?*

The previously cited example from Helfond already contains an answer to this question, and we shall not examine the numerous instances in which Dietzgen receives similar treatment at the hands of our Machians. It is more expedient to quote from Dietzgen himself in order to show his weak points.

"Thinking is a function of the brain," says Dietzgen in *The Positive Outcome of Philosophy*. "My desk as a picture in my mind is identical with my idea of it. But my desk outside of my brain is a separate object and distinct from my idea" (p. 62). These very clear materialistic propositions Dietzgen, however, completes thus: "'We distinguish between the object of sense perception and its mental image. Nevertheless the intangible idea is also material and real (p. 63). . . . The function of the brain is no more a 'pure' process than the function of the eye, the scent of a flower, the heat of a stove, or the touch of a table" (p. 64). Here is an obvious untruth. That thought and matter are "real,"—that they exist, is true. But to call thought material is to make an erroneous step, is to confuse materialism and idealism. But in truth it is only an inexact expression of Dietzgen's, who elsewhere speaks quite correctly. "Consciousness and matter have this in common, that they exist. . . . Thinking is a physical process and it cannot exist or

produce anything without materials any more than any other process of labor. My thought requires some material which can be thought of. This material is furnished by the phenomena of nature and life. . . . Matter is the boundary, beyond which the mind cannot pass. Mind is a product of matter, but matter is more than a product of mind . . ." (p. 74). The Machians refrain from analysing these materialistic arguments advanced by the materialist Dietzgen! They prefer to cavil at his inexact phrases and confused passages. For example, he says that scientists can be "idealists outside of their specialty" (p. 124). As to why he believes this, the Machians are silent. But on page 122 Dietzgen recognises the "positive side of modern idealism" and the "inadequacy of materialism" (p. 123), at which the Machians should rejoice. The source of the incorrect expression of Dietzgen lies in the statement that "the distinction between matter and mind is relative but not absolute" (p. 123). This is true, but from this follows not the inadequacy of materialism as such but the inadequacy of metaphysical, anti-dialectical materialism.

"Truth, profane or scientific, is not based upon personalities. It is based on external objects; it is objective. . . . We call ourselves materialists. . . . Those thinkers are philosophic materialists who put the real world at the beginning, at the head of their investigation, and the idea or spirit as the sequel and outcome, as the product, while their opponents follow the opposite method." [72] The Machians ignore this recognition of objective truth and the repetition of Engels' definition of materialism. But when Dietzgen says: "We would be equally right in calling ourselves idealists, inasmuch as our system is based upon the final results of philosophy, upon the scientific investigation of ideas, upon the clear insight won by us into the nature of the mind" (*ibid.*, p. 141), it is not difficult to cavil at this incorrect phrasing in order to refute materialism. In truth, the verbal expression, in Dietzgen's case, is more inexact than is his basic thought which can be reduced to this, that the traditional materialism can not investigate ideas scientifically without the help of historical materialism.

Here is Dietzgen's argument against traditional materialism: "Materialism is, like Political Economy, a scientific result. Just as we distinguish between modern and utopian socialism, so do we also distinguish between modern and eighteenth century materialism.

[72] *Philosophical Essays*, pp. 136-140.

With the latter we have *only* this in common, that we assume matter as the premise, as the cause of the idea" (p. 220). This word "only" is very characteristic! It includes all the epistemological grounds of materialism as distinct from agnosticism, Machism and idealism. But Dietzgen's efforts are here directed to marking himself off from vulgar materialism.

Yet a little further another incorrect expression crops up again: "The conception of matter must be given a more comprehensive meaning. To it belong all the phenomena of reality including our power of thinking" (p. 222). This muddle confuses materialism and idealism under the pretence of "broadening" the first. To cavil at such "broadening" is to forget the basis of Dietzgen's philosophy, the recognition of matter as the *prius*, as the "limit of spirit." And a few lines further down, Dietzgen corrects himself, saying that "the whole governs the part, and cosmic matter the mind. It is in this sense that we may regard the material world as the supreme being, as the cause of all causes, as the creator of heaven and earth" (p. 222). That the conception of "matter" must also include "thoughts," as Dietzgen repeats in the *Excursions*, is a confusion, for once such an inclusion is made, the epistemological distinction between mind and matter, materialism and idealism, has no meaning, a distinction which Dietzgen himself insists upon. That this distinction must not be stretched, or exaggerated, or regarded as metaphysically absolute, is beyond dispute, and in emphasising this lies the great merit of Dietzgen's dialectical materialism. The limits of the absolute necessity and the absolute truth of such relative distinctions are precisely the limits which define the direction of our knowledge-getting processes. It would be a great mistake to operate beyond these limits with the contrast of matter and mind, physical and psychical, or with any other absolute contradistinction.

Dietzgen, as distinguished from Engels, expresses his thoughts unclearly and vaguely. But putting aside the shortcomings of the exposition and the frequent mistakes, he successfully defends the "materialistic theory of knowledge and dialectical materialism." "The materialist theory of knowledge amounts, then, to this statement, that the human organ of cognition radiates no metaphysical light, but is a piece of Nature which pictures other pieces of Nature" (p. 309). "Our faculty of cognition is not a supernatural source of truth, but a mirror-like instrument which reflects the things of the world, or Nature" (p. 331). Our thoughtful Mach-

ians ignore an analysis of the individual propositions of Dietzgen's materialist theory of knowledge, but cavil at his vagueness and confusion and deviations from his basic position. Dietzgen pleases the reactionary philosophers just because he commits blunders. Wherever there is a blunder, we are sure to find the Machians! This is obvious enough.

Marx wrote Kugelmann on December 5, 1868: "It is long since Dietzgen sent me his manuscript [*The Nature of Human Brain-Work*], which, despite some confusion of ideas and too frequent repetitions, contains many excellent thoughts, and which as a product of the independent thinking of a worker, is worthy of admiration." Valentinov cites this review and it does not enter his mind to ask himself what Marx regards as Dietzgen's confusion. Was it Dietzgen's approach to Mach, or that which separates him from Mach. Mr. Valentinov does not ask himself this question, for he reads Dietzgen and Marx's letters like Gogol's hero, Petrushka, read words. It is not difficult to find an answer to this question: Marx often termed his viewpoint dialectical materialism, and Engels' *Anti-Dühring* which Marx read through before publication, expounds precisely this viewpoint. From this it should be clear even to the Valentinovs that Dietzgen's confusion lay only in his deviation from a consistent application of dialectics, from a consistent materialism. This is made quite evident, particularly in *Anti-Dühring*.

Had Valentinov and his associates no suspicion that Marx would pick out as confused only those elements in Dietzgen in which he approaches Mach, who went from Kant not toward materialism but towards Berkeley and Hume? Or perhaps the materialist Marx regarded Dietzgen's materialist theory of knowledge as confused and approved his deviations from materialism? Perhaps Marx approved of what *Anti-Dühring*, written with his collaboration, disapproves?

Whom are our Machians, masquerading as Marxians, trying to dupe in telling the world that "their" Mach approved of Dietzgen? Have they no suspicion that Mach approved of him only because of the presence of those very elements for which Marx dubbed him a muddlehead?

Taking Dietzgen as a whole, he does not deserve to be very much censured. He is nine-tenths materialist and never made any pretentions to originality or boasted a special philosophy distinct from

materialism. He spoke of Marx many times, and invariably as the head of the movement. (In 1873, on page 82 of his *Philosophical Essays*, and in 1876, on page 173, he stresses the fact that Marx and Engels "possessed the necessary philosophic training." In 1886, on page 265, he speaks of Marx and Engels "renowned as founders of the movement"). Dietzgen was a Marxian, and a poor service, indeed, has his son, Eugene Dietzgen, rendered him. And alas! the same is true for Comrade P. Dauge, too, who invented "natur-monism," "Dietzgenism," etc. "Dietzgenism" as distinct from dialectic materialism is rank confusion, a step backward toward reactionary philosophy, an attempt to create a tendency, not out of the really great things in Joseph Dietzgen (that worker-philosopher, who developed dialectic materialism in his own way, which is great enough) but out of his weak points. I will confine myself to two examples of how Comrade Dauge and Eugene Dietzgen are slipping down the sharp decline to reactionary philosophy!

Dauge writes in the second edition of the *Aquisit* (p. 273): "Even bourgeois criticism points out the connection of Dietzgen's philosophy with empirio-criticism and the thought of the immanentist school," and further: "especially that of Leclair."

That Dauge values and esteems Dietzgen is beyond doubt. But it is also beyond doubt that he puts him to shame by citing without protest the opinion of a bourgeois scribbler, who makes the sworn enemy of theism akin to the professors, akin to the "graduated flunkeys" of the bourgeoisie, and especially to that downright reactionary and open preacher of theism, Leclair. It is possible that Dauge repeated somebody's opinion on the followers of the immanentist school and Leclair, Dauge himself not being familiar with the writings of these reactionaries. But let this serve him as a warning: the road from Marx—through the peculiar deviations of Dietzgen—to Mach and the followers of the immanentist school is the road leading into the mire. The approach not only to Leclair but even to Mach distinguishes Dietzgen, the muddlehead, from Dietzgen, the materialist.

I shall defend Dietzgen against Dauge. I assert that Dietzgen did not deserve the disgrace of being classed with Leclair. And I call as witness the most authoritative person on such a question: as reactionary a philosopher, theist and "immanentist" as Leclair is himself, namely, Schubert-Soldern. In 1896 he wrote: "The social-democrats willingly follow Hegel with more or less (usually

less) right, but they materialise Hegel's philosophy. Compare Dietzgen in this respect. With Dietzgen the absolute becomes the universe,—the universe—the thing-in-itself, the absolute Subject, whose predicates are particular phenomena. That Dietzgen was converting pure abstractions into concrete processes, he was not, of course, aware of any more than Hegel was himself. . . . Hegel, Darwin, Haeckel, and naturo-historical materialism are combined in Dietzgen." [73] Schubert-Soldern more keenly discerns philosophic shades and tendencies than does Mach himself who praises everybody including Jerusalem.

Eugene Dietzgen was so naïve as to complain to the German public that the "narrow" Russian materialists had done violence to the thought of Joseph Dietzgen. He translated into German Plekhanov's and Dauge's articles on Joseph Dietzgen.[74] The poor *naturmonist's* complaint fell on his own head. Franz Mehring, who understands something of the philosophy of Marxism, wrote in his review that Plekhanov was essentially right as against Dauge.[75] That Dietzgen, where he deviated from Marx and Engels, *got into a scrape*, is for Mehring beyond doubt. Eugene Dietzgen replied to Mehring in a long, snivelling note, in which he said that Dietzgen might be of service "in the reconciliation" of the "contending orthodox and revisionist comrades." [76]

Another warning, Comrade Dauge: The road from Marx to "Dietzgenism" and "Machism" is a road into the mire, not merely for persons like Jones, Smith, etc., but for a whole movement.

And do not cry out, you Machians, that I resort to "authorities"; your clamour against the argument from authority is only a screen to conceal the fact that you substitute for the socialist authorities Marx, Engels, Lafargue, Mehring, Kautsky, the bourgeois authorities (Mach, Petzoldt, Avenarius and the immanentists). It would have been much better if you had not raised the question of "authorities" and "authoritarianism"!

[73] *Die Sociale Frage*, p. xxxiii.
[74] Joseph Dietzgen: *Erkenntnis und Warheit*, Stuttgart, 1908, Supplements.
[75] *Die Neue Zeit*, 1908, No. 38, p. 432.
[76] *Die Neue Zeit*, No. 44, p. 652.

CHAPTER FIVE

THE LATEST REVOLUTION IN NATURAL SCIENCE AND PHILOSOPHIC IDEALISM

A YEAR ago in *Die Neue Zeit* (1907, No. 52), there appeared an article by Joseph Diner-Dénes: "Der Marxismus und die neueste Revolution in der Naturwissenschaft." The defect of this article is that its author ignored the epistemologic consequences of "recent" physics, a problem in which we are especially interested at present. But it is precisely this defect that renders the viewpoint and conclusions of the author interesting to us. Joseph Diner-Dénes, like the present writer, holds the viewpoint of those "rank and file Marxians" of whom our Machians speak with such grand contempt. For instance, Yushkevich writes that "ordinarily an average, rank-and-file Marxian calls himself a dialectic materialist" (p. 1 of his book). And now such a rank-and-file Marxian, in the person of Diner-Dénes, *directly* compares the latest discoveries in science, especially in physics (x-rays, Becquerel rays, radium, etc.) with Engels' *Anti-Dühring*. To what conclusion did this comparison lead him? "In the various domains of natural science," writes Diner-Dénes, "new scientific acquisitions have been made, and all of them confirm the proposition which Engels particularly stresses, namely, that in nature, there are no irreconcilable contradictions, no fixed lines of demarcation and distinction," and that if certain contradictions and distinctions are discovered, then their immobility and absoluteness are read into nature by us alone. For instance, it was discovered that light and electricity are only manifestations of one and the same force of nature. Each day it becomes more probable that chemical affinity may be reduced to electrical processes. The apparently indestructible and the unanalysable elements of chemistry, whose number continued to grow, as if to deride the notion of a world-unity, is proven to be destructible and analysable. The scientists have succeeded in converting the element of radium into that of helium. "Just as all the forces of nature have been reduced to one force, so also may the various kinds of nature's substances be reduced to *one substance*." Having cited the opinion

of one of the writers who regards the atom as a condensation of ether, the author exclaims: "What a brilliant confirmation of Engels' remark 'that motion is a form of material being.' All the phenomena of nature are the result of various kinds of motion, and the differences between them lies in the fact that we, as men, perceive this motion in different forms. . . . Matter is exactly as Engels characterised it. Nature, like history, is subject to the dialectic laws of motion."

On the other hand, you cannot read anything by or about the Machians without encountering allusions to the new physics which, it is believed, has supposedly refuted materialism, etc. How these references are substantiated is another question; but the connection of recent physics, or rather of a certain school of recent physics, with Machism and other varieties of modern idealistic philosophy, is beyond doubt. To analyse Machism and to ignore this connection—as Plekhanov did—is to fail to take the spirit of dialectic materialism seriously, that is, to sacrifice Engels' entire method for the sake of this or that single letter of his. Engels says explicitly that "with each epoch-making discovery in the department of natural science ('not to speak of the history of mankind'), it (materialism) has been obliged to change its form" (*Feuerbach*, p. 65). Hence, the revision of "form" in Engels' materialism, the revision of his naturo-philosophic views is to be considered not as "revisionism" in the ordinary sense, but, on the contrary, as the kind of "revisionism" which is an integral part of Marxism. We criticise the Machians not for such revision but for their purely "revisionist" method—a method which consists in undermining the substance of materialism, under the pretext of criticising its form. We criticise them for adopting the presuppositions of the reactionary bourgeois philosophy without the slightest attempt to take account directly, frankly and definitely of such essential and significant assertions of Engels on this question, as, for example, the following: " . . .Matter without motion is unthinkable." [1]

It must be clear that in analysing the question regarding the connection between one school of recent physicists and the revival of idealism, we are far from the thought of even slightly treating the special doctrines of physics. We are exclusively interested in the epistemological conclusions which follow from certain definite positions and quite generally known discoveries. These epistemological

[1] *Anti-Dühring*, p. 86.

inferences seem so directly involved in the subject matter, that many a physicist has already treated them. And what is more, amongst the physicists themselves there are already various tendencies, and certain schools are being formed on this ground. Our object, then, is to propound clearly the divergent views of these tendencies and examine their relation to the fundamental alignments in philosophy.

1. *The Crisis in Modern Physics*

Henri Poincaré, the famous French physicist, says in his book[2] that there are "symptoms of a serious crisis" in physics, and devotes a special chapter to it (Chap. VIII). This crisis is not confined to the proposition that the "grand revolutionist, radium" has undermined the principle of the conservation of energy. "Other sciences are equally in danger" (p. 96). For instance, the principle of Lavoisier, or the principle of conservation of mass, has been undermined by the electron theory of matter. According to this theory the atoms are composed of very minute particles, charged with positive or negative electricity, called electrons and "are immersed in a medium which we call ether." The experiments of the physicists offer material for the calculation of the velocity of the electrons and the measurement of their mass (or the relation of their mass to their electrical charge). The velocity of this motion proves to be comparable with the velocity of light (300,000 kilometres per second), in fact, amounts to one-third of the latter's speed. In the presence of such conditions we must take into account the two aspects of the mass of the electron according to the necessity of overcoming the inertia of (1) the electron itself and (2) the ether. The first mass will be the real or mechanical mass of the electron, the second will be the "electrodynamic mass which represents the inertia of ether." And here the first mass proves to be equal to zero. The entire mass of electrons, or, at least, of the negative electrons, proves to be in its origin, totally and exclusively electrodynamic. Mass disappears. The foundations of mechanics are undermined. The principle of Newton, the equality of action and reaction, go by the board.

We have before us the "ruins" of the old principles of physics, "a general destruction of principles." It is true, he corrects him-

[2] *The Value of Science*, Science Press, New York, 1907, p. 96.

self, saying that all the exceptions to the principles belong to the realm of infinitesimal quantities; that it is possible that we are still ignorant of other infinitesimals which would counteract the destructive effects of the old principles. And besides, radium is still very rare. But at any rate we have reached a "stage of doubt." We have already made the acquaintance of the author's epistemologic inferences from this "stage of doubt." "It is not nature which gives, or dictates, to us the ideas of space and time, but we give them to nature; whatever is not thought, is the purest zero." These are idealist inferences. The destruction of the fundamental principles shows—such is the trend of Poincaré's thought—that these principles are not copies, not reflections of nature, not pictures of something external in relation to man's mind, but products of this mind. Poincaré does not develop those inferences consistently, does not take an interest in the essentially philosophic side of the question. Abel Rey, the French writer on philosophic problems, treats this question in detail.[3] True, the author himself is a positivist, that is, a muddlehead and a half-Machian, but in this case it is even better, for he cannot be suspected of the desire to "slander" the idol of our Machians. Rey cannot be trusted when the question is an exact definition of philosophic concepts and particularly of materialism, for Rey too is a professor, and as such is imbued with a feeling of contempt for the materialists. (His ignorance of the epistemology of materialism is extreme.) That this "man of science" should be unaware of the existence of a certain Marx or Engels is out of the question. Yet Rey consulted carefully and conscientiously the extremely abundant literature on the question, not only in French, but in English and German as well (Ostwald's and Mach's works especially). We shall often avail ourselves of his references.

The attention of philosophers in general, says the author, and particularly of those who, for one reason or another, wish to criticise science in general, is now directed to physics. "In discussing the limits and validity of physical knowledge, it is, in fact, the legitimacy of positive science, the possibility of knowledge of the object, that is discussed" (pp. i-ii). From the "crisis of modern physics" we hasten to draw sceptical conclusions (p. 14). Now, in what does this crisis consist? During the first two-thirds of the nineteenth century the physicists had agreed on fundamental con-

[3] Abel Rey: *La théorie physique chez les physiciens contemporains*, Paris, 1907.

cepts. "They believed in a purely mechanical explanation of nature; they assumed that physics is nothing but a complication of mechanics, namely, molecular mechanics. They did not differ unless it was as to the procedure employed to reduce the physical to the mechanical, as to the details of the mechanism [p. 16]. . . . At present it seems that the spectacle which the physico-chemical sciences offer us, is completely changed. Extreme disagreements have replaced the former unity, and those disagreements are not infrequent, not in details, but in the leading and fundamental ideas. Even if the statement that each scientist has his peculiar tendencies were an exaggeration, we must admit, however, that like art, science, too, especially physics, has numerous schools, whose views are often far removed from one another and sometimes even violently opposed. . . .

"From this one may judge the far-reaching significance of what is called the crisis in modern physics and the extent of its scope.

"Until the middle of the nineteenth century, traditional physics had been convinced that a mere extension of the familiar methods of physics would suffice to account for the metaphysics of matter. This physics ascribed to its theories an ontological significance. And these theories were wholly mechanistic. The traditional 'mechanism' [Rey employs this word in the special sense of a system of views, which reduces physics to mechanics] thus claimed over and above the results of experience, a real knowledge of the material world. This was not an hypothetical account of experience —it was a dogma" (p. 16).

We must here interrupt the honourable "positivist." It is clear that he is referring to the materialistic philosophy of traditional physics, without wishing to call the devil (materialism) by name. To a Humean, materialism is metaphysics, dogma, a transcendence of the limits of experience. Without knowing what materialism really is, the Humean Rey can have no notion of dialectics, and of the distinction between dialectic materialism and metaphysical materialism, as formulated by Engels. The correlation, therefore, between absolute and relative truth, for example, is absolutely unclear to Rey.

"The critical observations directed against the traditional mechanism, which were expressed in the second half of the nineteenth century, weakened the position of the ontological reality of mechanism. On the basis of these criticisms a philosophic conception of

physics which became almost traditional with philosophy at the end of the nineteenth century, established itself. Science was nothing but a symbolic formula, a method of denotation (*repérage*), and as the methods of denotation vary according to schools, the conclusion was soon reached that only that could be denoted which was previously designed by man as capable of denotation. Science became a work of art for dilettantes, a work of art for the utilitarians —an attitude which implies the negation of the possibility of science. Science, as a pure 'artifact,' as mere utilitarian technique, had no right, without perverting the sense of the words, to call itself science. To say that science can be nothing, save such an artifice, is to disavow science in the proper sense of the word.

"The rejection of traditional mechanism, or, to be more precise, the criticism to which it was subjected, involved this proposition: science itself is in a critical position. From the impossibility of adhering to a pure and simple traditional mechanism it was concluded that science was impossible" (p. 17). And the author poses the question: "Is the actual crisis of physics a temporary and external incident in the evolution of science, or is it science itself which has taken a sudden turn and abandoned the path it has followed hitherto? [p. 18].

"If these sciences, which historically have been emancipators, suffer a crisis which reduces them to nothing save valuable, technically useful recipes; if they are stripped of their entire significance, then from the standpoint of natural knowledge the result must be a complete overthrow of the methods of logical and historical analysis of ideas. Physics loses then all educational value; the positive spirit which it represents now becomes false and dangerous." Science is able to offer no true knowledge save practical recipes. "The cognition of the real must be sought by other means. . . . We must take another road, and turn to subjective intuition, to the mystical sense of reality, in a word, to the mysterious, to what we had thought had been given its death-blow by science" (p. 19).

As a positivist the author considers such a view to be wrong and the crisis of physics only temporary. We shall see how Rey vindicates Mach, Poincaré and the others from such aspersions. At present we limit ourselves to stating the fact of the "crisis" and its significance. From the last words of Rey it is quite clear, who the reactionary elements were who availed themselves of this crisis

and made it still more acute. In the preface to his work, Rey directly says that "the fideist and anti-intellectualist movement of the last years of the nineteenth century seek support in the general spirit of modern physics" (p. 2). In France those are termed fideists who rely more upon faith than upon reason. By anti-intellectualism is meant the doctrine which denies the claims or pretensions of reason. Hence, in its philosophic aspect, the substance of the "crisis of modern physics" arises from the fact that the old physics regarded its theories as "a real presentation of the material world," that is, as a reflection of objective reality. The new movement in physics sees in scientific theory only symbols, signs, and prescriptions for practice; it denies the existence of objective reality independent of our consciousness and reflected in it. Had Rey adhered to a correct philosophic terminology, he would have said: the materialistic theory of knowledge, which had been instinctively accepted by traditional physics, was changed for an idealistic and agnostic one, and fideism availed itself of this, despite the efforts of the idealists and agnostics.

But Rey does not present this change, which constitutes the crisis, as if all modern physicists stand opposed to traditional physics. Nay, he shows that according to their epistemologic tendencies the modern physicists are divided into three schools: energetic or conceptualist (from the word concept which means pure idea); mechanistic or neo-mechanistic, to which the preponderant majority of physicists adhere; and intermediate between the two, the critical school. To the first belong Mach and Duhem; to the third, Henri Poincaré; to the second, Kirchhoff, Helmholtz, Thomson (Lord Kelvin), Maxwell—among the old; Larmor and Lorentz—among the more recent. What the difference between the two basic alignments is (for the third is not really an independent position but intermediate between the other two) may be judged from the following words of Rey:

"Traditional mechanism constructed a system of the material world. In its doctrine of the structure of matter, it resorted to the conception of 'elements which were qualitatively homogeneous and identical,' elements which had to be regarded as 'immutable and impenetrable,' etc. Physics 'constructed a *real* edifice with *real* material and *real* cement.' The physicist thought he knew the material elements, their operating causes, the ways in which they worked, and the *real* laws of their action [pp. 33-39]. . . . This

outlook has been changed mainly in that the ontological validity of the theory is now abandoned and the phenomenological part stressed instead. The conceptual view has to deal with 'pure abstractions.' It searches for a purely abstract theory which eliminates, as much as possible, the hypothesis of matter. . . . The notion of energy becomes the fundamental structure of recent physics, and therefore conceptualist physics may in most cases be called with Mach, energetics" (p. 46).

Rey's confusion of energetics and Machism is incorrect, of course, just as is his assurance that despite the sharp disagreement with the conceptualists, the neo-mechanistic school approaches the phenomenalist view of physics (p. 48). The "new" terminology of Rey does not clarify, but obscures matters; still we were not able to avoid it in order to convey to the reader the "positivist's" view of the crisis in physics. The substance of the question at issue between the "new" and the old school is the same, as the reader can convince himself, as that revealed in the above quoted criticism of Helmholtz by Kleinpeter. In presenting the views of various physicists, Rey reflects all the indefiniteness and vacillation of their philosophic attitudes in his exposition. The essence of the crisis of modern physics consists in the destruction of the old laws and basic principles, in the rejection of an objective reality existing outside of mind, that is, in the change from materialism to idealism and agnosticism. "Matter has disappeared"—that is how the fundamental and typical embarrassment in the several questions which created this crisis may be characterised. We shall pause upon this embarrassment.

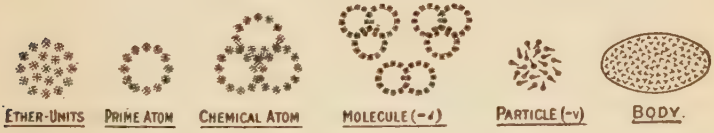
2. *"Matter Has Disappeared"*

The literal expression, "matter has disappeared," may be found in the description given by the recent physicists of the latest discoveries, as, for instance, in Houllevigue's book, *L'evolution des sciences*. "The atom dematerialises, matter disappears." [4] To see how easily the fundamental philosophic implications are drawn by the Machians, let us take Valentinov. He writes: "The statement that the scientific explanation of the world receives a firm founda-

[4] L. Houllevigue: *L'evolution des sciences*, Paris, 1908, pp. 63, 87, 88; *Cf.* his article: "Les idées des physiciens sur la matiere, in *Année psychologique*, 1908

tion only in materialism is nothing but a fiction, and an absurd fiction at that" (p. 67). As the destroyer of this absurd fiction they point to the well-known Italian physicist, Augusto Righi, who says that the theory of electrons "is not so much a theory of electricity, as of matter; the new system merely puts electricity in the place of matter." [5] Having quoted these words (p. 64), Mr. Valentinov exclaims: "Why did Righi allow himself to offend holy matter? Because he is perhaps a solipsist, or an idealist, a bourgeois criticist, or a certain empirio-monist or even something worse than that?"

This remark, which seems to Valentinov to be fatal to the materialists, discloses his virgin innocence of what the real question of materialism is. What is the *real* connection between idealism and the "disappearance of matter"?—this Mr. Valentinov does not understand at all. And this "disappearance of matter," which he repeats after the modern physicists, has no relation to the epistemologic distinction of materialism and idealism. To throw light upon it, let us take one of the clearest and most consistent Machians, Karl Pearson. He conceives the physical realm to be constituted of groups of sense impressions. He illustrates "our conceptual model of the physical universe" in the following diagrammatic manner, making it plain that the relation of size is not taken into consideration by the diagram: [6]



To simplify his diagram, Pearson eliminates the question of the correlation of ether and electricity or positive and negative electrons. But this is not important. What is important is that according to Pearson's idealistic viewpoint, "bodies" are sense-perceptions; whereupon the constitution of these bodies of particles, and particles of molecules and so forth, concerns the changes in the model of the physical world, and not at all the question whether bodies are symbols of perception, or perceptions the images of bodies. Ma-

[5] Augusto Righi: *Die moderne Theorie der physikalischen Erscheinungen*, Leipzig, 1905, p. 131.

[6] *Grammar of Science*, p. 282.

terialism and idealism are distinguished by their respective solution of the problem concerning the source of our knowledge and the relation of knowledge (or the "psychical" at large) to the physical realm; and the question of the structure of matter, of atoms and electrons is something that concerns only "this physical world." When the physicists say "matter disappears," they mean by this that, until the present the natural sciences had reduced their measurements of the physical realm to three ultimate concepts: matter, electricity and ether; and that now *only* the last two remain, for they have finally succeeded in reducing matter to electricity. The atom is explained as being the simulacrum of the infinitely small solar system within which the negative electrons move around the positive electron with a definite (and immeasurably immense) velocity. Instead of scores of elements they consequently have succeeded in reducing the physical realm to two or three elements (insofar as the positive and negative electron constitute "two kinds of essentially distinct matter," as the physicist Pellat says (*loc. cit.*, pp. 294-295). Hence the natural sciences lead to the "unity of matter" (*ibid.*); [7] this is the real meaning of the disappearance of matter, of its change into electricity, etc., which baffles so many people. "Matter disappears"—means that matter in the form of the limit which we have known up to now vanishes, as our knowledge penetrates deeper; those properties of matter which before seemed absolute, immutable, and primary (impenetrability, inertia, mass, etc.) disappear, and now become relative, belonging only to certain states of matter. For the sole "property" of matter—with the recognition of which materialism is vitally connected—is the property of being *objective reality*, of existing outside of our cognition.

The error of Machism in general, and the Machian new physics in particular, is that the foundation of materialism is ignored, together with the distinction between metaphysical materialism and dialectic materialism. The recognition of immutable elements, "of the immutable substance of things," is not materialism, but is meta-

[7] *Cf.* Oliver Lodge: *Electrons*, London, 1906. "The electrical theory of matter," the recognition of electricity as the "fundamental substance," is "an approximate accomplishment of that to what the philosophers strove always, that is, the unity of matter"; *Cf.* Righi: *Ueber die Struktur der Materie*, Leipzig, 1908; J. J. Thomson: *The Corpuscular Theory of Matter*, London, 1907; P. Langevin: "La physique des electrons" in the *Revue generale des sciences*, 1905, pp. 256-7.

physical, anti-dialectical, materialism. Dietzgen, therefore, stresses the point that the "subject-matter of every science is endless," that not only the infinite but the "smallest atom" as well, is incommensurable, unknowable to the end, inexhaustible.[8] Engels, therefore, adduced his example regarding the discovery of alizarine in coal tar and criticised mechanistic materialism. To put the question from the only correct, that is, the dialectico-materialistic standpoint, we must ask: do electrons, ether, etc., exist as objective realities outside of the human mind? The scientists must answer this question without hesitation and the answer must be an affirmative one, for they recognise without hesitation the existence of nature prior to man and organic matter. Thus is the question decided on the side of materialism, for the idea of matter, as we already stated, epistemologically means nothing new, besides some objective reality existing independently of the human mind and reflected by it.

But dialectical materialism insists on the approximate, relative character of every scientific proposition concerning the structure of matter and its properties; on the absence of absolute boundaries in nature; on the transformation of moving matter from one state to another, which from an ordinary viewpoint appears evidently irreconcilable, etc. Amazing as is the transformation of imponderable ether into ponderable matter, to the viewpoint of "common sense," and conversely, as amazing as the absence of any other kind of mass in the electron save electro-magnetic may appear to it, together with the strange discovery that mechanical laws of motion are limited to only one region of natural phenomena, while the others conform to subtler laws of electro-magnetics and so forth —yet all this for dialectic materialism is only another corroboration of its truth. Recent physics fell into an idealist swamp mainly because the physicists did not know dialectics. They combated metaphysical (in Engels' sense of the word, and not in the positivist, or Humean) materialism and its one-sided "mechanisation," and by so doing they not only threw the water out of the bath, but the child as well. By denying the immutability of the elements and the properties of matter known hitherto, they ended with the denial of matter, the denial of the objective reality of the physical world. By denying the absolute character of the most important and basic laws, they ended in the denial of every objective law, in the declaration of the natural law as a mere conventionality, "a limit of expectancy," "a

[8] *Philosophical Essays*, p. 317.

logical necessity," and so forth. By insisting on the approximate, relative character of our knowledge, they ended in the denial of the object existing independently of cognition, an object which is reflected in knowledge with an approximate degree of truth. And so forth, and so on without end.

Bogdanov's discussions in 1899 about "the immutable essence of things," Valentinov's and Yushkevich's discussions about "substance"—these are fruits of the ignorance of dialectics. Only one thing is, from Engels' viewpoint, immutable—the reflection by the human mind (when the human mind exists) of a world *existing and developing independently of the mind.* No other "immutability," no other "essence" or "absolute substance," in the sense in which the idle official philosophy portrayed these, existed for Marx and Engels. The "essence" of things or their "substance" is also relative, it expresses only the degree of man's power penetrating into and knowing objects; and even if yesterday this penetration did not go any further than the atom, and to-day, no further than the electron and ether, then dialectic materialism insists on the temporary, relative, approximate character of all these milestones on the road of knowledge of nature, through the progressive science of man. The electron is as inexhaustible as the atom, nature is infinite, but it *exists* infinitely; and only this categorical, unconditional recognition of its existence beyond the consciousness and sensation of man, distinguishes dialectic materialism from relativist agnosticism and idealism.

Let us cite two examples of the way the new physics vacillates unconsciously and instinctively between dialectic materialism, which remains unknown to the bourgeois savants, and "phenomenalism" with its inevitably subjectivist (and directly fideist) inferences.

The same Augusto Righi, whom Valentinov was *unable* to ask the question which interested him, the question about materialism, writes in the preface to his book:

"What those electrons and electrical atoms properly are has remained a mystery until now; but regardless of this it may, perhaps, be the lot of the new theory to attain with time a philosophic significance, in so far as it arrives at absolutely new hypotheses regarding the structure of ponderable matter and strives to reduce all phenomena of the external world to one common origin.

"From the standpoint of the positive and utilitarian tendencies

of our time such privilege, is, if you please, not insignificant, and the theory may be recognised before everything else as a convenient means to introduce order and to compare facts, to serve as a guide in the search for further phenomena. But if in former times they had too much confidence in the faculties of human spirit and thought which quite easily embraced the last causes of all things, in our time, however, there is a tendency to fall into a contrary error" (*loc. cit.*, p. 3).

Why does Righi separate himself from the positivist and utilitarian tendencies? Because, not having obviously any definite philosophic viewpoint, he instinctively clings to the reality of the outer world and to the recognition of the new theory, not only because it is "convenient" (Poincaré), not only because it is "empirio-symbolic" (Yushkevich), not only for the reason that it "harmonises" experience (Bogdanov), or whatever else the names of similar subjectivist tricks may be, but because it is a further step in the knowledge of objective reality. If this physicist were to acquaint himself with dialectic materialism, his judgment of the error of old metaphysical materialism, would, perhaps, become the starting point of a correct philosophy. But the entire environment in which these people live estranges them from Marx and Engels, casts them into the arms of the vulgar official philosophy.

Nor is Rey himself any more familiar with dialectics. But he too was compelled to state that amongst recent physicists there are those who are regarded as the successors to the traditions of "mechanism" (materialism). The path of "mechanism" follows not only Kirchhoff, Hertz, Boltzmann, Maxwell, Helmholtz and Lord Kelvin. "Pure mechanists, and many more among those who represent the last word in mechanism, as, *e. g.*, those who follow Lorentz and Larmor, formulate an electric theory of matter and arrive at the denial of the constancy of mass, making it a function of motion. *All of them are mechanists, because they take real motion as their starting point*" (Rey's emphasis, pp. 290-291). "... If, for example, the recent hypotheses of Lorentz, Larmor and Langevin were confirmed, in virtue of certain experimental concordance, and were to attain a sufficiently stable basis for the systematisation of physics, it is certain that the modern mechanical laws would depend upon the laws of electro-magnetism; they would only form a special case within well-determined limits. The constancy of mass and the principle of inertia would hold good only for the average velocities

of bodies, taking the term 'average' in relation to our senses and the phenomena which constitute our general experience. A general change of mechanics would become necessary, and hence, a general change in physics as a systematic science.

"Would it signify the abandonment of mechanism? By no means. The pure mechanistic tradition would continue to persevere, and mechanism would follow its normal course of development" (p. 295).

"The electronic physics, which should be ranged amongst the mechanist theories in view of its general spirit, tends to impose a maximum systematisation upon physics. Its spirit is mechanistic though the fundamental principles of physics are not furnished by mechanics but by experimental data of electricity, because (1) it employs *material* and *figurative* elements in order to represent the physical properties and their laws; it expresses itself in terms of perception.

"(2) If it does not consider physical phenomena as particular cases of mechanical phenomena, it considers the mechanical phenomena as particular cases of physical phenomena. The laws of mechanics are always in *direct connection* with the physical laws; and mechanist notions remain of the same order as the physico-chemical notions. In the traditional mechanism these notions were copies of the *relatively slow* motions which, because they alone had been directly observable, were taken as types of all possible motions. New experiments showed that it was necessary to *extend* our conception with regard to all possible motions. Traditional mechanics remains entirely intact, but it is applied only to relatively slow motions. . . . In relation to great velocities, the laws are different. Matter is reduced to electrical particles, the ultimate elements of the atom. . . .

"(3) Motion, as displacement in space, remains a uniquely typical element in physical theory.

"(4) And, finally, from the viewpoint of the general spirit of the science of physics and its methods, this conception of the science of physics, its methods, its theories and their relation to experience—remains more than any other, *absolutely identical* with the views of mechanism, and the theory of physics, which was ushered in with the Renaissance" (pp. 46-47).

This long quotation from Rey is given because due to his constant fear of "materialist metaphysics," it would be impossible dif-

ferently to expound his assertions. But though Rey, and the physicists of whom he speaks, may renounce materialism, it is nevertheless quite certain that traditional mechanics was a "copy" of motions of moderate velocity, while recent physics is "a copy" of motions of enormous velocity. The recognition of the theory as a copy, as an approximate reflection of objective reality, is materialism. When Rey says that amongst the recent physicists there "is a reaction against the conceptual [Machian] and energetics school," and when he regards the physicists of electron theory as the representatives of this reaction (p. 46), a better corroboration could not be desired of the fact, that the struggle is essentially between the materialist and idealist tendencies. But we must not forget that, besides the common prepossessions of all educated philistinism against materialism, in the case of the most outstanding theoreticians, it is combined with an absolute ignorance of dialectics as well.

3. *Is Motion Without Matter Conceivable?*

The utilisation of the new physics by idealism and the tendency to draw idealist conclusions therefrom, are the result not of the discovery of new kinds of substance and force, matter and motion, but of the attempt to conceive motion without matter. It is essentially the futility of this attempt that our Machians fail to comprehend. They refused to take account of Engels' proposition, that "motion without matter is inconceivable." Joseph Dietzgen in 1869 expressed this idea, as did Engels, in his *Nature of Human Brain Work;* it is true not without his characteristically confused attempts to "reconcile" materialism and idealism. Let us disregard these attempts, which are sufficiently explained by the fact that Dietzgen waged a polemic against the anti-dialectic materialism of Büchner, and see what position Dietzgen took on the question which interests us at present. He says: "They [idealists] like to have the general without the individual, spirit without matter, force without substance, science without experience or material, the absolute without the relative" (*loc. cit.*, p. 124).

Thus Dietzgen recognises the attempts to separate motion from matter, force from substance, as idealism and puts it into the same category as the separation of thought from the brain. "Liebig," he continues, "who is especially fond of straying from his inductive

science into the field of speculative thought, says in an idealist sense: 'Force cannot be seen' [p. 125]. . . . The spiritualist or the idealist believes in a spiritual force whose nature is ghostlike and inexplicable [p. 126]. . . . The contradistinction between force and matter is as old as that between idealism and materialism [p. 127]. . . . True, there is no force without matter, no matter without force. Forceless matter and matterless force are nonentities. If there are idealistic naturalists who believe in the existence of immaterial forces then we say that to that extent they are not naturalists . . . but spiritualists" (pp. 130-131).

From this we see that forty years ago there were also naturalists, ready to recognise the possibility of motion without matter, and that Dietzgen considered them to "that extent" spiritualists. What, then, is the connection of idealism with the separation of matter from motion, with the elimination of substance from force? Does it not lie in the fact that it really is "more economical" to think of motion without matter?

Let us imagine a consistent idealist who holds that the world is his sensation, or idea. (If we take "nobody's" sensation or idea, only the variety of idealism will change, but not its substance.) The idealist would not think of denying that the world is motion, *i. e.*, the movement of his thoughts, ideas, sensations. The question "What is being moved?" the idealist will spurn and consider as absurd. What really takes place, he would say, is this: My sensations change, my ideas come and go, and nothing more. Outside of me there is nothing. "It moves"—and that is all. It is hardly possible to conceive of a more "economical" way of thinking. And by no proofs, or syllogisms, or definitions would it be possible to refute the solipsist, if he consistently adhered to this view.

The basic distinction between the materialist and the idealist is that the materialist takes sensation, perception, conception and, in general, human consciousness as the copy of objective reality. The world is the movement of this objective reality reflected in our consciousness. To the movement of ideas, perceptions, etc., corresponds the movement of matter outside of us. The notion of matter expresses nothing but objective reality which is given us in sensation. Therefore to separate matter from motion would be the same as separating thought from objective reality, the same as separating sensation from the external world—in a word, would be equivalent to joining the idealist camp. This ruse of recognising motion with-

out matter in order to deny more effectively materialism is only possible because of the silence which is kept about the relation of matter to thought. It would appear as if that relation did not exist, but in reality it is smuggled in, remains unmentioned at the very beginning of the argument, and subsequently crops up more or less imperceptibly.

They tell us that matter has disappeared, and wish to draw epistemologic conclusions therefrom. "And has thought itself remained?" we ask. If not, if with the disappearance of matter thought has also disappeared, if with the disappearance of the brain and nervous system our ideas and sensations, too, have vanished, then it means that everything has disappeared. So does the argument together with whatever "thought"—or thoughtlessness—there is in it! If thought has remained, if you assume that with the disappearance of matter, thought, idea, sensation, etc., do not disappear, then you have secretly embraced the idealist viewpoint. This happens to people who wish, for "economy's sake," to conceive of motion without matter, for *by implication,* from the very fact that they continue their discourse, they recognise the existence of thought *after* the disappearance of matter. This means that a very simple or a very complex system of idealism is taken as fundamental; very simple, if the position reduces to solipsism (I exist, and the world is only *my* sensation); very complex, if instead of the thought, idea and sensation of a living man, a dead abstraction is posited, that is, no particular thought, no particular idea, no particular sensation, but thought in general (the Absolute Idea, the Universal Will, etc.), sensation as an indeterminate "element," the "psychical" which replaces the whole of physical nature, etc., etc. Amongst the varieties of idealism there may be thousands of peculiar shades and kinds and it is always possible to add a thousand and first shade. To the author of this thousand and first puppet system (empirio-monism, for example) its difference from all the other varieties will seem to be very momentous. From the point of view of materialism, however, these distinctions are totally unimportant. Important only is the point of departure. Important only is that the attempt to *conceive* motion without matter, smuggles in *thought* separate from matter—this is idealism.

Therefore, the English Machian, Karl Pearson, for example, the clearest and most consistent Machian, inimical to verbal trickery, directly begins the seventh chapter of his book, devoted to "matter,"

with the section which bears the name "All things move—but only in conception." "It is, therefore, for the sphere of perception, idle to ask what moves and why it moves." [9]

Therefore, in the case of Bogdanov, his philosophic misfortunes began earlier than his acquaintance with Mach. They began when he took the great chemist, but poor philosopher, Ostwald at his word, on the possibility of conceiving motion without matter. To pause on this long past episode of Bogdanov's philosophic growth is in place here, especially since it is impossible to ignore Ostwald's "energetics" in speaking of the connection between idealism and certain tendencies in recent physics.

"We have already said," wrote Bogdanov in 1899, "that the nineteenth century did not succeed in ultimately solving the problem as to 'the immutable essence of things.' This essence under the name of 'matter' plays an important rôle even in the views of the foremost thinkers of the century." [10]

We have already said that this represents nothing but confusion. The recognition of the objective reality of the outer world, the recognition of existence, outside of our mind, of eternally moving and eternally changing matter, is here confused with the recognition of the immutable essence of things. It is hardly possible that in 1899 Bogdanov did not include Marx and Engels in the number of the "foremost thinkers." But he obviously did not grasp their dialectic materialism.

" . . . In the processes of nature there are usually two factors to be distinguished: matter and motion. It cannot be said, however, that the notion of matter is very clear. It is impossible to give a satisfactory answer to the question of what matter is. It is defined as the 'cause of sensations' or as 'the permanent possibility of sensation,' but it is evident that matter is here confused with motion. . . ."

It is evident that Bogdanov argues here incorrectly. It is not enough that he confuses the materialist recognition of the objective source of sensations ("cause of sensations" does not clearly enough express this) with Mill's agnostic definition of matter as the *possibility* of sensation. But having just reached the question as to the existence or non-existence of an objective source of our sensations, instead of going further, he abandons it without further discussion

[9] *The Grammar of Science*, p. 243.
[10] *Fundamental Elements of the Historical Outlook*, p. 38 (in Russian).

and hastens to another question as to whether matter without motion is possible or not. The idealist may regard the world as being made up of the *motion* of our sensations (be it "socially organised" or "harmonious" to the highest degree); the materialist regards the world as motion of an objective source, of which our sensations are the objective model. The metaphysical, that is, the anti-dialectical, materialist may posit the existence of matter (be it "temporary," "prior to," the "first impetus," etc.) without motion. The dialectic materialist, however, not only regards motion as the inseparable property of matter but rejects even the simplified interpretation of motion.

" . . . Such a definition as 'matter is that which moves' would, perhaps, prove the most exact; but this is as absurd as saying that matter is the subject of the sentence, whose predicate moves. The fact is, however, that men in the epoch of the beginnings of statics, were wont to see something necessarily solid in the rôle of the subject—a certain object,—while the phenomenon of 'motion,' so inconvenient from the outlook of statics, they agreed to tolerate only as predicate, as one of the attributes of matter."

This is something like Akimov's accusation against the adherents of *Iskra*,[11] that in their programme they do not use the word "proletariat" in the nominative case! Whether we say that "the world is moving matter," or "the world is material movement," it will not change the issue.

" . . . But energy must have a vehicle! say those who believe in matter. Why? asks Ostwald reasonably. Must nature necessarily consist of subject and predicate?" (p. 39).

Ostwald's answer, which pleased Bogdanov so much in 1899, is

[11] *Iskra* (Spark). The name of the underground central organ of the Russian Social-Democratic Labor Party during its formative period. Founded in 1900 and first published in Germany, it continued until the Second Congress of the Party in 1903 to represent the revolutionary Marxian wing of the Party. Lenin was the prime mover in the establishment and the conduct of the paper during this period, and those following the policies of the paper assumed its name. The early generation of Russian Marxists, among whom were found many of the leaders of the 1917 Revolution, were brought up on the *Iskra* when it was under the ideological leadership of Lenin. After the split of the party into two groups—Bolsheviks and Mensheviks—as a result of the decisions of the 1903 Congress, Lenin withdrew from the editorial board and the paper passed into the control of the Mensheviks, under the leadership of Plekhanov. It ceased publication in Switzerland in 1905.

Akimov, V. P. (Makhnovetz). A Russian socialist and one of the representatives of the so-called "economist" tendency which stressed the economic as against the political struggles of the workers.—*Ed.*

plain sophistry. "Must our hypotheses consist of electrons and ether?" we could retort upon Ostwald. In reality, matter, as the "subject" can only be eliminated by mind from "nature," only because thought as the "subject" (as the *prius*, as independent of matter) is taken as the starting point in philosophy. Not the subject, but the objective source of sensation is eliminated and *sensation* becomes the "subject," that is, philosophy inevitably becomes Berkeleian, no matter how "profoundly" the word "sensation" is weighted. Ostwald attempted to escape this inevitable philosophic alternative —materialism or idealism—through the ambiguous use of the word "energy," but this attempt was precisely as futile as similar contrivances. If energy is motion, then you only shift the difficulty from the subject to the predicate, you have only changed the question from "Does matter move?" to "Is energy material?" Does this transformation of energy outside of my consciousness take place independently of man and mankind, or are these only ideas, symbols, conventional marks, etc.? This attempt to avoid old epistemologic errors merely by a "new" terminology proves fatal to the philosophy of "energetics."

Here are examples of how Ostwald, the philosopher of energetics, became muddled. In the preface to his book,[12] he declares that he would "consider it a great gain should the old problem of how to connect the conceptions of matter and spirit" be simply and naturally eliminated, should both concepts be subsumed under the concept of "energy." But this would not be a gain, but a loss, because the question of whether epistemological investigation (Ostwald does not clearly see that he has asked an epistemological, and not a chemical, question) is to be led in the materialist or idealist direction, is not solved but confused by the arbitrary substitution of the term "energy." Of course, if we "subsume" under this concept matter and spirit, then the verbal annihilation of the distinction is beyond doubt, but the absurdity of the notion of "brownies and fairies" does not vanish simply because it is called "energetics." On page 394 of the *Vorlesungen* we read: "That all outer phenomena can be presented as energy processes can most simply be explained by the fact that the processes of our consciousness themselves are energetical and they impose such a property upon all outer experiences." This is pure idealism: our thought

[12] Wilhelm Ostwald: *Vorlesungen über Naturphilosophie*, 2nd ed., Leipzig, 1902, p. viii.

does not reflect the transformation of energy in the external world, but the external world reflects a certain "property" of our consciousness! The American philosopher, Hibben, pointing to this and similar passages in Ostwald hit the mark in saying that Ostwald "appears, moreover, in Kantian disguise—that the phenomena of the external world become intelligible only through the fundamental forms which thought imposes upon them.[13] . . . It is obvious therefore that if the primary concept of energy is so defined as to embrace psychical phenomena, we have no longer the simple concept of energy as understood and recognised in scientific circles or even among the *Energetiker* themselves" (p. 330). The transformation of energy is analysed by science itself as an objective process, independent of the consciousness of man and the experience of mankind, that is, in materialistic fashion. And Ostwald himself in a number of instances probably in the majority of instances, means by energy nothing but *matter* in motion.

Thereupon occurred a rare event! The disciple of Ostwald, becoming Mach's disciple, began to reproach Ostwald not because of inconsistency in inclining towards a materialistic interpretation of energy, but because he lays himself open to such an interpretation (energy sometimes is made the basis of the materialist view). The materialists criticise Ostwald because he relapses into idealism, because he attempts to reconcile materialism and idealism. Bogdanov criticises Ostwald from the idealist viewpoint. In 1906 he wrote: " . . . Hostile to atomism, but in the rest greatly akin to the old materialism, Ostwald's energetics at first enlisted my heartiest sympathy. But I soon noticed an important contradiction in his *Naturphilosophie.* Often emphasising the *purely methodological* significance of the conception of "energy," in a great number of instances he himself is not consistent in his own view. From a pure symbol of correlations of facts of experience, energy is converted into the substance of experience, into the material stuff of the world. . . ."[14]

Energy is a pure symbol! After this Bogdanov can dispute as much as he pleases with the "empirio-symbolist" Yushkevich, with the "pure Machians," with the empirio-criticists, etc. From the standpoint of the materialists they will be regarded as disputes be-

[13] Hibben: "The Theory of Energetics and its Philosophical Bearings, *The Monist,* April, 1903, Vol. XIII, p. 329.

[14] *Empirio-Monism,* Bk. III, pp. xvi-xvii.

tween two people, one of whom believes in a yellow devil, and the other in a green one. The differences between Bogdanov and the Machians are not important, but what they share in common—is very important. They are—an *idealist* interpretation of "experience" and "energy," the denial of an objective reality through the processes of adaptation to which human experience arises, and the denial that the sole scientific "methodology" and scientific "energetics" consists in reflecting this objective reality.

"The material of the world is indifferent to it [Ostwald's energetics]. Both the old materialism and panpsychism are perfectly compatible with it" (p. xvii). And Bogdanov changed from a "muddled energetics" not to the materialist but the idealist camp. "When energy is presented as substance then it is nothing else than the old materialism minus the absolute atoms—materialism with a correction in the sense of the continuity of the existent" (*ibid.*). Yes, from the "old" materialism, that is, from the metaphysical materialism of the naturalists, Bogdanov goes, not to dialectic materialism which in 1906 he understood as little as he did in 1899, but to idealism and fideism; for against the "methodological" conception of energy, against its interpretation as a "pure symbol of correlation of the facts of experience," not one enlightened representative of modern theism, not one follower of the immanentist school, not one "neo-criticist," will object. Take Paul Carus, whose acquaintance we have already made, and you will see that this Machian criticises Ostwald in the manner of Bogdanov: "Materialism and energetics are in the same predicament." [15] "We are helped very little by materialism when we are told that everything is matter, that bodies are matter, and that thoughts are merely a function of matter, and Professor Ostwald's energetics is not a whit better when it tells us that matter is energy, and that the soul too is only a factor of energy" (p. 533).

Ostwald's energetics is a good example of how quickly the "new" terminology becomes fashionable; and as quickly proves that a slightly different mode of expression does not at all wipe out the distinctions between fundamental philosophic questions and tendencies. Through the use of the term "energetics" it is just as possible to express both materialism and idealism (more or less consistently, of course) as it is through the term "experience" and the like. The physics of energetics has been the source of new idealist at-

[15] *The Monist*, 1907, Vol. XVII, p. 536.

tempts to conceive of motion without matter. It has seized upon the occasion of the decomposition of those particles of matter which have been hitherto accounted as impossible of decomposition, and upon the discovery of the heretofore invisible forms of material movement.

4. *Two Tendencies in Modern Physics and English Spiritualism*

In order to show concretely the philosophic battle which is being waged in modern literature as a consequence of the several implications which follow from recent physics, we shall let the participants in the "battle" speak for themselves, beginning with the English combatants. The physicist, Arthur W. Rücker, defends one tendency from the point of view of the natural sciences; the philosopher, James Ward, another tendency, from the point of view of epistemology.

At the convention of the English naturalists at Glasgow in 1901, Rücker, the president of the physics section, chose as the topic of his inaugural address, the question concerning the validity of physical theory, concerning the doubts which have arisen as to the existence of atoms and especially of the ether. The speaker referred to those who had taken up the problem, namely, to the physicists Poincaré, Poynting (the English adherent of the symbolists or Machians), the philosopher Ward, and to the celebrated book of Haeckel's and finally presented his own views.[16]

"The question at issue is whether the hypotheses which are at the base of the scientific theories, now most generally accepted, are to be regarded as accurate descriptions of the constitution of the universe around us, or merely as convenient fictions." (No. 1345—That is to say, in terms of the question at issue with Bogdanov, Yushkevich and the others, whether or not physical theory is a copy of objective reality, of moving matter, or whether it is only a "methodology," a "pure symbol," a mere "form of the organisation of experience.") Rücker agrees that it may turn out that practically there is no difference between both theories; the direction of a river can be determined just as well by one who only examines the blue streak on a map or diagram, as by one who knows that this

[16] The British Association at Glasgow, 1901. Presidential address by Professor A. W. Rücker in *The Scientific American Supplement*, 1901, Nos. 1345 and 1346.

streak represents a real river. Theory, from the standpoint of a convenient fiction, may be regarded as an "aid to memory," as "a means for producing apparent order out of disorder by codifying the observed facts and laws in accordance with an artificial system, and thus arranging our knowledge under a comparatively small number of heads." We can confine ourselves to defining heat as a form of motion or energy. "By using this phraseology, we exchange a vivid conception of moving atoms for a colourless statement of heat energy, the real nature of which we do not attempt to define." Fully recognising the possibility of great scientific achievements in this direction, Rücker "ventures to assert that the exposition of such a system of tactics cannot be regarded as the last word of science in the struggle for the truth. The questions still force themselves upon us: Can we argue back from the phenomenon displayed by matter to the constitution of matter itself; whether we have any reason to believe that the sketch which science has already drawn is to some extent a copy, and not a mere diagram of the truth?"

Analysing the problem of the structure of matter, Rücker takes air as an example, saying that it consists of gases and that science resolves "an elementary gas into a mixture of atoms and ether. . . . There are those who cry 'Halt'; molecules and atoms cannot be directly perceived; they are mere conceptions, which have their uses, but cannot be regarded as realities."

Rücker meets this objection by referring to one of any number of instances in the history of science: the rings of Saturn appear to be continuous masses when observed through a telescope. The mathematicians prove by calculation that this is impossible, and spectral analysis corroborates the conclusions reached on the ground of the calculations. Another objection: atoms and ether are endowed with properties which our senses do not disclose as being possessed by ordinary matter. Rücker answers this, also, by referring to such phenomena as the diffusion of gases and liquids. A series of facts, observations and experiments prove that matter consists of separate particles or grains. Whether these particles and atoms are "mere fragments of matter" engulfed in the surrounding ether, or whether they are parts of this medium in a particular state, is so far an open question, and does not bear upon the theory of whether atoms exist or not. There is no ground to deny *a priori*, against the evidence of experience, that "quasi-material substances" exist, which are different from ordinary matter (atoms and ether).

Particular errors are inevitable, but the bulk of scientific data leaves no room for doubt about the existence of atoms and molecules.

Rücker then points to the new experimental data on the structure of atoms and corpuscles (electrons), which are charged with negative electricity, and notes the similarities in the various results of calculating the size of molecules: the "first approximation" gives a diameter of one millionth of a millimeter. Omitting his remarks and criticism of neo-vitalism, we quote his conclusions:

"Those who belittle the ideas which have of late governed the advance of scientific theory, too often assume that there is no alternative between the opposing assertions that atoms and the ether are mere figments of the scientific imagination, and that, on the other hand, a mechanical theory of the atoms and the ether, which is now confessedly imperfect, would, if it could be perfected, give us a full and adequate representation of the underlying realities. For my own part I believe that there is a *via media* [*loc. cit.*, No. 1346]. . . . A man peering into a darkened room may unclearly discern the objects, but if he does not stumble over the furniture and does not walk into a looking glass as into a door, that means that he sees correctly. We ought, therefore, neither to disregard the pretence to penetrate deeper than the surface of nature, nor pretend that we already fully unveiled the mystery of the world around us.

"It may be granted that we have not yet framed a consistent image either of the nature of the atoms or of the ether in which they exist, but I have tried to show that in spite of the tentative nature of some of our theories, in spite of many outstanding difficulties, the atomic theory unifies so many facts, simplifies so much that is complicated, that we have a right to insist—at all events until an equally intelligible rival hypothesis is produced—that the main structure of our theory is true; that atoms are not merely aids to puzzled mathematicians, but physical realities" (*ibid.*).

That is how Rücker ended his address. The reader sees that the speaker does not indulge in epistemology, but, in the name of a host of naturalists, he strongly stands up in defence of an instinctive materialist standpoint. The substance of his position is this: the theory of physics is a copy—becoming more exact in time—of objective reality. The world is matter in motion, of which we acquire more and more knowledge in the course of time. The incorrectness of Rücker's philosophy follows from the conditional

defence of the "mechanical" (why not electro-magnetic?) theory, of the ether and his failure to understand the correlation between relative and absolute truth. This physicist lacks knowledge of dialectic materialism (we shall not here consider the environment which causes the English professors to call themselves "agnostics").

Let us see now how the spiritualist, James Ward, criticises this philosophy:

"Naturalism is no science, and the mechanical theory of Nature, the theory which serves as its foundation, is not science either. . . . Nevertheless, though Naturalism and the natural sciences, the Mechanical Theory of the Universe and mechanics as a science, are logically distinct, yet the two are at first sight very similar, and historically are very closely connected. Between the natural sciences and philosophies of the idealist (or spiritualist) type there is indeed no danger of confusion, for all such philosophies necessarily involve criticism of the epistemological assumptions which science unconsciously makes. . . ." [17] True! The natural sciences unconsciously maintain that their teachings reflect the objective reality, and only such a philosophy is reconcilable with the natural sciences! ". . . Not so with Naturalism, which is as innocent of any theory of knowledge as science itself. In fact Naturalism, like Materialism, is only physics treated as metaphysics. . . . Naturalism is less dogmatic than Materialism, no doubt, owing to its agnostic reservation as to the nature of ultimate reality; but it insists emphatically on the priority of the material aspect of its Unknowable."

The materialist treats physics as metaphysics! A familiar argument. By metaphysics is meant the recognition of objective reality outside of man; the spiritualists agree with the Kantians and Humeans in such reproaches against materialism. This is understood; for unless the *objective* reality of things, bodies and objects, known to everyone, be denied, it is impossible to clear the road for "real conceptions" in the spirit of Rehmke!

" . . . When the essentially philosophical question, how best to systematise experience as a whole [a plagiarism from Bogdanov?], arises, the naturalist—as we have seen—contends that we must begin from the physical side. Then only are the facts precise, determinate and rigorously concatenated: every thought that ever stirred the human heart . . . can, it holds, be traced to a perfectly definite redistribution of matter and motion. . . . That propositions

[17] James Ward: *Naturalism and Agnosticism*, 1906, Vol. I, p. 303.

of such philosophic generality and scope are legitimate deductions from physical science, few, if any, of our modern physicists are bold enough directly to maintain. But many of them consider that their science itself is attacked by those who seek to lay bare the latent metaphysics, the physical realism, on which the Mechanical Theory of the Universe rests. . . . The criticism of this theory in the preceding lectures has been so regarded [by Rücker]. . . . In point of fact my criticism [of this "metaphysics" hateful also to the Machians] rests throughout on the expositions of a school of physicists—if one might call them so—steadily increasing in number and influence who reject entirely the almost mediæval realism. . . . This realism has remained so long unquestioned, that to challenge it now seems to many to spell scientific anarchy. And yet it surely verges on extravagance to suppose that men like Kirchhoff or Poincaré—to mention only two out of many distinguished names—who do challenge it, are seeking 'to invalidate the methods of science!' . . . To distinguish them from the old school, whom we may fairly term physical realists, we might call the new school physical symbolists. The term is not very happy, but it may at least serve to emphasise the one difference between the two which now specially concerns us. The question at issue is very simple. Both schools start, of course, from the same perceptual experiences; both employ an abstract conceptual system, differing in detail but essentially the same; both resort to the same methods of verification. But the one believes that it is getting nearer to the ultimate reality and leaving mere appearances behind it; the other believes that it is only substituting a generalised descriptive scheme that is intellectually manageable, for the complexity of concrete facts. . . . On either view the value of physics as systematic knowledge *about* things is unaffected; its possibilities of future extension and of practical application are in either case the same. But the speculative difference between the two is immense, and in this respect the question which is right becomes important . . ." (pp. 304-305).

The question, as put by this frank and consistent spiritualist, is remarkably clear and to the point. Indeed, the difference between the two schools in modern physics is *only* philosophic, only epistemologic. Indeed, the basic distinction is that one recognises the "ultimate" (it ought to be called objective) reality to be reflected by our theory, and the other denies it, considering theory only as a systematisation of experience, a system of empirio-symbols, etc.

Recent physics, having found new aspects of matter and new forms of its motion, asks the old philosophic questions on the occasion of the collapse of the old physical conceptions. And if the adherents of "half-hearted" philosophic tendencies ("positivists," Humeans, Machians) cannot put the controversial question distinctly, the outspoken idealist Ward, however, has completely unveiled the issue in question.

". . . Sir A. W. Rücker devoted his Inaugural Address to a defence of physical realism against the symbolic interpretations recently advocated by Professors Poincaré and Poynting and by myself [pp. 305-306; and in other parts of his book Ward adds to this list the names of Duhem, Pearson and Mach].[18] . . . Rücker is constantly talking of 'mental pictures,' while constantly protesting that atoms and ether must be more than these. Such procedure practically amounts to saying: In this case I can form no other picture, and therefore the reality must be like it. . . . He allows the abstract possibility of a different mental picture. . . . Nay, he allows 'the tentative nature of some of our theories'; he admits 'many outstanding difficulties'! After all, then, he is only defending a working hypothesis, and one, moreover, that has lost greatly in prestige in the last half century. But if the atomic and other theories of the constitution of matter are but working hypotheses, and hypotheses strictly confined to physical phenomena, there is no justification for a theory which maintains that mechanism is fundamental everywhere and reduces the facts of life and mind to epiphenomena—makes them, that is to say, a degree more phenomenal, a degree less real than matter and motion. Such is the mechanical theory of the universe. Save as he seems unwittingly to countenance that, we have then no quarrel with Sir Arthur Rücker" (pp. 314-315).

It is, of course, totally absurd that materialism should maintain the "lesser" reality of consciousness or should necessarily adhere to a "mechanistic" "world-picture" of matter in motion and not an electro-magnetic, or even some immeasurably more complicated one. But in a truly acrobatic manner, much more ably indeed than our Machians (these muddled idealists), did the outspoken and straightforward idealist, Ward, discover the weak points in an "instinctive" naturo-historical materialism, that is, its inability to explain the correlation of relative and absolute truth. Ward resorts to sophis-

[18] *See* Vol. II, pp. 161, 63, 57, 75, 83, etc.

try when he declares that since truth is relative, and approximate, only "groping" towards the essence of things, it cannot reflect reality! But the case for atoms as "working hypotheses" is very clearly put by the spiritualist. Modern, cultural fideism (from which Ward directly derives his spiritualism) has no desire to regard the conceptions of natural science as anything more than "working hypotheses." We shall concede science to you naturalists, provided you surrender epistemology and philosophy to us—such are the terms of the concubinage under which the theologians and professors in the "advanced" capitalist countries live. For the other points in Ward's epistemology, which betray the influence of "recent" physics, we must refer to his determined struggle against *matter*. What is matter? What is energy? asks Ward, mocking at the plethora of hypotheses and the contradictions between them. Is it an ether or ethers?—Or perhaps, some new "perfect liquid" which is arbitrarily endowed with new and improbable qualities. And Ward's conclusion is: "We find nothing definite except movement left. Heat is a mode of motion, elasticity is a mode of motion, light and magnetism are modes of motion. Nay, mass itself is, in the end, supposed to be but a mode of motion of a something that is neither solid nor liquid nor gas, that is neither itself a body nor an aggregate of bodies, that is not phenomenal and must not be noumenal, a veritable 'aperion' on which we can impose our own terms" (Vol. I, p. 140).

The spiritualist is true to himself, and separates motion from matter. The movement of natural bodies has turned out to be upon analysis a movement of something which has not a constant mass, into a movement of an unknown charge of an unknown electricity in an unknown ether. The dialectics of this *material* transformation which takes place both in the laboratory and the factory, serves in the eyes of the idealist (as in the eyes of the public at large, and those of the Machians) not as a confirmation of the truth of materialist dialectics, but as evidence against materialism: "The mechanistic theory, as a professed explanation of the world, receives its death-blow from the progress of mechanical physics itself" (p. 143). The world is matter in motion, we reply, and the laws of its motion are reflected in mechanics for movements of lesser velocity, and in electro-magnetism—for movements of greater velocity. "Extended, solid, indestructible atoms have always been the stronghold of materialistic views of the universe. But, unhappily for such

views, the hard, extended atom was not equal to the demands which increasing knowledge made upon it" (p. 144). The destructibility of the atom, its inexhaustibility, the mutability of all the forms of matter and the variability of its motion, have been the stronghold of dialectic materialism. All boundaries in nature are arbitrary, relative, moveable, and express the gradual approximation of our reason toward the knowledge of matter. But this does not at all prove that nature, matter itself, is a symbol,—a product of our reason. The electron is to the atom as a dot in a book to the size of a building 160 feet long, 80 feet broad, and 40 feet high; it moves with a velocity of 270,000 kilometres per second, its mass is a function of its velocity, it makes 500 trillion rotations in a second —all this is much more complicated than the old mechanics, but all this is, nevertheless, movement of matter in space and time. Human reason has discovered many amazing things in nature and will discover even more, thereby increasing its power over her. But this does not mean that nature is the creation of our reason or of abstract reason, of Ward's God, or of Bogdanov's "substitution," etc.

"Rigorously carried out as a theory of the real world, that ideal lands us in nihilism: All changes are motions, for motions are the only changes we can understand, and so what moves, to be understood, must itself be motion [p. 166]. . . . As I have tried to show, and as I believe, the very advance of physics is proving the most effectual cure for this ignorant faith in matter and motion as the inmost substance rather than the most abstract symbols of the sum of existence. . . . We can never get to God through a mere mechanism . . ." (p. 180).

Well, this is exactly after the manner of the *Outlines of the Philosophy of Marxism!* You should now turn, Mr. Ward, to Lunacharsky, Yushkevich, Bazarov and Bogdanov; though they are more "shamefaced" than you, yet they preach the same doctrine.

5. *Two Tendencies in Modern Physics and German Idealism*

In 1896, with an air of unusual exultant triumph, the eminent Kantian-idealist, Herman Cohen, came out with an introduction to the fifth edition of the *History of Materialism*, falsified by Albert Lange. "Theoretical idealism," exclaimed Cohen (p. xxvi), "has begun to shake the foundations of naturalistic materialism and will,

perhaps, soon destroy it. . . . Idealism permeates the new physics. . . . Atomism must give up its place to dynamism. . . . The remarkable turning point set in with a greater realisation of the nature of the chemical problems of substance, enabling them to conquer the materialist views of matter. Just as Thales made the first abstraction of matter and linked to it speculative reflections which later developed into the notion of electrons, so the theory of electricity in turn was destined to cause the greatest revolution in the concept of matter and, through the consequent transformation of matter into force, led to the victory of idealism" (p. xxix).

Herman Cohen, in as clear and definite a manner as James Ward, takes account of the basic philosophic tendencies, without losing himself (as our Machians do) in petty differences between the various kinds of energetic, symbolic, empirio-critical, empirio-monistic, etc., idealisms. Cohen takes the basic philosophic tendency of that school in physics which is now associated with the names of Mach, Poincaré and others, and correctly regards it idealistic. "The transformation of matter into force" appears to Cohen to be the chief gain of idealism, just as it appeared to those "spiritualistic" scientists—whom Dietzgen exposed in 1869. Electricity is declared to be the scientific prop of idealism, for it has destroyed the old theory of the structure of matter, broken up the atom into its elements, discovered new forms of material movement, so unlike the old, so totally beyond anything that had hitherto been investigated or studied, so unusual and "miraculous," that one could find justification for giving an illegitimate interpretation of nature as immaterial (spiritual, mental, or psychical) motion. The limit of yesterday's knowledge of the infinitely small particles of matter has disappeared—hence, concludes the idealist, matter has disappeared (and thought remains). Every physicist and every engineer knows that electricity is (material) motion, but nobody can reasonably explain what it is that is being moved; hence, concludes the idealist, we can dupe the philosophically uneducated with the tempting "economical" proposition: "Let us *conceive* of motion without *matter*."

Herman Cohen tries to enlist as his ally the famous physicist Heinrich Hertz. Hertz is ours—he is a Kantian, he sometimes admits *a priori* reasoning, he says. Hertz is ours—he is a Machian, contends the Machian, Kleinpeter, on the other hand, for in Hertz we find "the same subjective view of conceptions, as we find in

Mach."[19] This curious contention as to whom Hertz belongs is a good example of how resolutely the idealists hunt for the minutest error, the slightest vagueness in the expression of renowned naturalists, in order to justify their renewed defence of fideism. Indeed Hertz's philosophic preface to his *Mechanics*[20] reveals the familiar views of the scientists, who have been intimidated by the professorial howl against the "metaphysics" of materialism, but shows nevertheless that Hertz was unable to overcome an instinctive conviction in the reality of the external world. Kleinpeter himself recognises this; Kleinpeter, who on the one hand writes lying popular booklets for masses of readers on the theory of knowledge of the natural sciences, in which Mach is identified with Hertz, while on the other hand, in special philosophic articles, he admits that "Hertz, as distinguished from Mach and Pearson, still clings to the prejudice that it is possible to explain all of physics in a mechanistic way";[21] that he still retains the conception of the thing-in-itself and "the ordinary viewpoint of physicists," that Hertz "still adheres to the view of the existence of the world in itself."[22]

It is interesting to note Hertz's own attitude toward the theory of energetics. He writes: "If we ask ourselves the real reasons why physics at the present time prefers to express itself in terms of energy, our answer will be that in this way, it best avoids talking about things of which it knows very little. . . . It is true that we are now convinced that ponderable matter consists of atoms; and we have definite notions of the magnitude of these atoms and of their motions in certain cases. But the form of the atoms, their connection, their motions in most cases—all these are entirely hidden from us. . . . So that although our conceptions of atoms is in itself an important and interesting object for further investigations, it is in no wise specially fit to serve as a known and secure foundation for mathematical theories" (p. 21). Hertz, from further study of ether, expects a clarification of the "essence of traditional matter, its inertia and gravitational force" (Vol. I, p. 354).

It is evident from this that Hertz did not even conceive of the possibility of a non-material aspect of energy. For philosophers, energetics served as an excuse to substitute idealism for materialism.

[19] *Archiv für systematische Philosophie*, 1898-99, Vol. V, p. 167.
[20] Heinrich Hertz: *Gesammelte Werke*, Leipzig, Vol. III, pp. 1, 2, 49.
[21] *Kantstudien*, 1903, Vol. VIII, p. 309.
[22] *The Monist*, 1906, Vol XVI, No. 9, p. 164; the article about Mach's "monism."

The scientist looked upon energetics as a convenient method of expressing the laws of matter in motion at a time when physicists, if the expression is permissible, had set out from the atom, but had not yet reached the electron. This state of affairs has continued to a great extent to the very present; one hypothesis is replaced by another; nothing definite is known of the positive electron. But three months ago (June 22, 1908), Jean Becquerel reported to the French Academy of Science that he had succeeded in discovering this "new component part of matter." [23] Of course, the idealists simply couldn't miss the opportunity of making out "matter" to be merely something sought for by the human mind, for then it would really be no more than a "symbol."

Edward von Hartmann, another German idealist of a more reactionary tinge than Cohen, devoted a whole book to the cosmic outlook of recent physics.[24] We are, to be sure, not interested in the special discussions of the author in defence of his peculiar variety of idealism. Suffice it to say that this idealist states the facts substantially as they had been stated by Rey, Ward and Cohen. "Modern physics has grown on a realistic basis," says Hartmann, "and only the Neo-Kantian and agnostic movement of our own time has caused the final results of physics to be interpreted in an idealist sense" (p. 218). Three epistemological systems, according to Hartmann, lie at the basis of recent physics—hylo-kinetics (from the Greek *hyle*-matter, and *kinesis*-motion, that is, the recognition of physical phenomena through matter in motion), energetics, and dynamism (the recognition of force without substance). It is to be understood that the idealist Hartmann defends "dynamism," and infers from this that the laws of nature are an expression of the "world-reason"; in a word, he "substitutes psychical for physical nature. But he is forced to admit that hylo-kinetics has most physicists on its side, that this system "is more frequently employed (p. 190), that its serious defect is the "materialism and atheism which menace pure hylo-kinetics" (p. 189). The author quite justly regards energetics an an intermediary system and calls it agnosticism (p. 136). Of course, it is an "ally of pure dynamism, for it eliminates substance" (pp. vi, 92), but Hartmann dislikes its agnosticism, for he believes that it is a form of "anglomania," incompatible with the essential idealism of a Junker.

[23] *Comptes rendus der séances de l'Académie des Sciences*, p. 1311.
[24] *Die Weltanschauung der modernen Physik*, Leipzig, 1902.

It is highly instructive to see how this irreconcilable partisan of idealism (non-partisans in philosophy are just as hopelessly muddleheaded as they are in politics) explains to the physicists what it means to follow one epistemological tendency or another.

"A very insignificant proportion of those physicists who follow this manner," writes Hartmann of the idealist interpretations of the latest results in physics, "wholly recognise the vast importance and the complete consequences of such an interpretation. They have failed to realize that physics has retained its independence so far as its particular laws are concerned, just as the physicists, despite their idealism, have retained their realistic postulates, *e. g.*, the existence of things-in-themselves, their real mutability in time, real causality. . . . For only by granting these realistic postulates [*i. e.*, the transcendental realistic interpretation of causality, time, three-dimensional space], *i. e.*, on the condition that nature, of whose laws the physicists speak, coincides with the realm of things-in-themselves . . . can one speak at all of natural laws as distinct from psychical laws. Only on the assumption that natural laws act in a realm independent of the realm of our reason, can they serve as an explanation of the fact that the logically necessary consequences of our images prove to be images of the naturally and historically necessary effects of the unknown which these images reflect or symbolise in our consciousness" (pp. 218-219).

Hartmann rightly feels that the idealism of the new physics is only a *fashion* and not a serious philosophic turning point from natural-historical materialism. He correctly explains to the physicists, therefore, that in order to transform their "fashion" into a consistent, genuine idealism it is necessary to change radically their doctrines of the objective reality of time, space, causality and natural laws. We cannot regard atoms, electrons and ether alone as mere symbols, as mere "working hypotheses," it is essential to declare time, space, the laws of nature and the whole of the outer world "working hypotheses" as well. Either materialism, or a universal substitution of the psychical for the physical—there is a host of candidates "to mix the two drinks," but neither we nor Bogdanov belong to that class.

Ludwig Boltzmann was among the foremost of the German physicists who systematically combated the Machian tendency (he died in 1906). We have already pointed out that to the "fad of the new epistemological dogmas" he contrasted the simple and clear reduc-

tion of Machism to solipsism (*see* Chap. I, § 6). Boltzmann was, of course, afraid to call himself a materialist and even made it plain that he had nothing against the Divine Being.[25] But his theory of knowledge is essentially materialistic, and as is recognised by S. Günther,[26] the historian of natural sciences in the nineteenth century, it is characteristic of the views of the majority of scientists. "We infer," says Boltzmann, "the existence of all things solely from the impressions which they make on our senses" (p. 29). Theory is an "image" (or copy) of nature, of the external world (p. 77). To those who maintain that matter is only a complex of sense-perceptions, Boltzmann points out that under such conditions other people are only the sensations of the speaking person (p. 168). These "ideologists," as Boltzmann sometimes calls the idealists, present us with a "subjective picture of the world" (p. 176). The author prefers a "simpler, more objective picture of the universe." "The idealist compares the judgment that 'matter exists as well as our sensations,' with the child's notion that a stone which gets a beating experiences pain. The realist compares this judgment according to which it is impossible to imagine the emergence of the psychical out of the material or even out of the play of atoms, with the opinion of an uneducated person who maintains that the distance between the sun and the earth cannot amount to twenty million miles, for he cannot conceive of it" (p. 186). Boltzmann does not deny science's ultimate ideal to present spirit and volition as "complicated actions of parts of matter" (p. 396).

Boltzmann very often contested Ostwald's energetics from the standpoint of physics, proving that Ostwald can neither reject nor eliminate the formula of kinetic energy (half of the mass multiplied by the square of velocity) and that he turns in a vicious circle, deducing energy from the mass (by accepting the formula of kinetic energy) at the beginning, and afterwards defining mass as energy (pp. 112, 139). On this occasion I recollect Bogdanov's exposition of Mach in the third book of *Empirio-Monism.* "In science," writes Bogdanov, referring to Mach's *Science of Mechanics,* "in the equations of mechanics, the conception of matter is reduced to the projected coefficient of mass, whose magnitude, upon an accurate analysis, proves to be a reciprocal of the accelera-

[25] Ludwig Boltzmann: *Populäre Schriften,* Leipzig, 1905, p. 187.

[26] Siegmund Günther: *Geschichte der inorganischen Naturwissenschaften im 19 Jahrhundert,* Berlin, 1901, pp. 941, 942.

tion of two physical complexes of bodies" (p. 146). Of course, if a certain body will be taken as the unit, then the motion (mechanical) of other bodies can be expressed by the mere relation of acceleration. But "bodies" (matter) do not at all disappear on account of it, do not thereby cease to exist independently of our consciousness. When the entire world will have been reduced to the movement of electrons, it will be possible to eliminate the electrons from all equations, because it will be assumed everywhere, and the correlation of the groups or of aggregates of electrons will be reduced to their mutual acceleration, if the forms of motion prove to be as simple as those in mechanics.

Combating the "phenomenalist" physics of Mach and the others, Boltzmann maintained that "those who propose to eliminate atomism by means of differential equations, cannot see the wood for the trees (p. 144). . . . If we do not wish to entertain any illusions about the significance of the differential equations, . . . there can be no doubt that this picture of the world (represented by differential equations) must necessarily be in essence atomic, *i. e.*, it will be a summary description that in accordance with certain rules, large quantities of objects situated in a three-dimensional manifold will be conceived as changing in time. These things can, of course, be similar or different, unchangeable or changeable" (p. 156). "It is perfectly obvious that phenomenalist physics only cloaks itself in differential equations," said Boltzmann in his address at the Congress of Scientists at Munich, "but in reality it likewise is derived from atomic units [*Einzelwesen*]. And as we have to imagine these units as possessing now one property, now another, for different groups of phenomena, there will soon be need of a simpler and more homogeneous atomism [p. 223]. . . . The doctrine of the electron has developed into an atomic theory for the complete science of electricity" (p. 357). The unity of nature is revealed in the "astonishing and far-reaching analogies" between the differential equations, which hold for different domains of phenomena. "By these same equations we can solve problems of hydro-dynamics and express the theory of potentials. The theory of vortices in liquids as well as the theory of friction in gases reveal the most astonishing analogy to the theory of electro-magnetism, etc." (p. 7). Those who recognise "the theory of universal substitution," cannot escape the question: Who was able to "substitute" physical nature so homogeneously?

As if in answer to those who are marking themselves off from the "physics of the old school," Boltzmann relates in detail how certain specialists in "physical chemistry," have taken an epistemological position contrary to Machism. In 1903 Vaubel, the author, of "one of the best" works on the subject (according to Boltzmann), "takes a definitely hostile attitude to the frequently praised phenomenalist physics" (p. 381). "He tries to present a more concrete and plausible exposition of the nature of atoms and molecules and the forces acting between and within them. The presentation is in conformity with the most recent experiments in this domain [ions, electrons, radium, Zeeman's effects, etc.] The author adheres strictly to the dualism of matter and energy,[27] having this in common, that they are both different expressions of the law of the conservation of energy. In relation to matter, the author again clings to a dualism between ponderable matter and ether, yet regards the latter in the most rigorous sense, as material" (p. 381). In the second volume of his works (on the theory of electricity) the author from "the very beginning takes the view that the phenomena of electricity are produced by interaction and motion of atomic entities, namely, electrons" (p. 383).

Hence, as far as Germany is concerned, too, we have confirmed what the spiritualist James Ward recognised to be true for England, namely, that the physicists of the realistic school systematise facts and discoveries of the later years, no less successfully than do the physicists of the symbolic school, and that the essential difference between them consists "only" in different epistemological viewpoints.[28]

[27] Boltzmann wishes to say that the author does not attempt to conceive motion without matter. To speak of dualism here is ridiculous. Philosophic monism and dualism consist respectively in a consistent and inconsistent deduction of materialism or idealism.

[28] The work of Erich Becher: *Philosophische Voraussetzungen der exacten Naturwissenschaften*, Leipzig, 1907, with which I became acquainted only after my book had been completed, confirms what has been said in this paragraph. Standing closer to the epistemological point of view of Helmholtz and Boltzmann, that is, to a "shamefaced' materialism which has not been thought out to the end, the author dedicates his work to a defence and interpretation of the fundamental assumptions of physics and chemistry. This defence is, naturally, converted into a struggle with the fashionable Machian tendency in philosophy toward which a reaction is growing continually (*cf.* p. 91 *ff.*). Becher correctly characterises this tendency as "subjectivistic positivism" (p. iii) and reduces the central point of the struggle with it to the proof of the "hypothesis" of the external world (Chapters III-VII), to the proof of its "existence independently of human perceptions (*von Wahrgenommenwerden*

6. *Two Tendencies in Modern Physics and French Fideism*

The idealist philosophy in France seized upon the vacillations of the Machian physics with no less determination. We have already seen how the neo-criticists reacted to Mach's *Science of Mechanics*, having from the start noted the idealist character of the roots of his philosophy. The French Machian, Henri Poincaré, had still more success in this respect. Thereupon, the most reactionary idealist philosophers with definite fideistic tendencies immediately seized upon his theory. Le Roy, the representative of this tendency, contends that "the truths of science are purely conditional, are merely symbolic. You are making absurd 'metaphysical' claims to the effect that you have knowledge of objective validity. Be logical, then, and agree with us that science has only a practical significance in one domain of human activity and religion has no less a real significance in another domain of activity. The 'symbolic' Machian science has no right to deny theology." Poincaré felt ashamed of these conclusions, and in his book, *The Value of Science*, he especially attacked them. But it is worthy to note what sort of an epistemological position he was compelled to take in order to rid himself of allies of Le Roy's type. He writes: "He [Le Roy] regards the intellect as incurably powerless, it is only able to give more scope to other sources of knowledge, to the heart for instance, to sentiment, to instinct or to faith [p. 113]. . . . I do not go so far

unabhängige Existenz). The denial of this "hypothesis" by the Machians frequently leads them to *solipsism* (pp. 78-82 *ff*). Mach's view that the only subject matter of science appears to be "sensations and their complexes, and not the external world" (p. 138), Becher calls "sensationalistic monism" (*Empfindungsmonismus*) and classifies it with the number of "purely conscionalistic tendencies." This clumsy and absurd term is based on the Latin word "*conscientia*"—consciousness, and means nothing else than idealism (*cf.* p. 156). In the last two chapters of the book Becher compares quite adequately the old, mechanistic outlook with the "world picture" of the recent electrical theory of matter ("the kinetico-elastic" with the "kinetico-electric" conception of nature, as the author puts it). The latter conception, based on the theory of electrons, is a step forward towards the knowledge of the world unity in which the "elements of the material world are electric charges" (*Ladungen*, p. 223). "Every purely kinetic conception of nature means nothing save that there are a certain number of moving objects, be they called electrons or something else; the state of motion of these objects in each subsequent moment of time is defined quite legitimately by the position and state of their motion in the preceding moment of time" (225). The chief defect of Becher's book is his absolute ignorance of dialectical materialism. This ignorance frequently leads him into confusion and absurdity, on which it is impossible to pause here.

as to say that scientific laws are purely conditional, merely symbolic. . . . If, therefore, scientific 'recipes' have a value, as rules of action, it is because we know they have succeeded, in general, at least. But to know this is to know something; then why say that we can know nothing" (p. 114)?

Poincaré resorts to the criterion of practice. But thereby he only shifts the question without settling it, for this criterion may be interpreted in a subjective and objective sense. Le Roy also recognises this criterion for the science of commerce; he only denies that it is adequate to serve as a criterion of objective truth. Such a denial is for him sufficient to pave the way to a recognition of the subjective truth of religion existing alongside of the subjective truth (*i. e.*, dependent upon man) of science. Poincaré understood that the reference to practice as an argument against Le Roy would not suffice, and he proceeds with the question of the objectivity of science. "What is the measure of their objectivity? Well, it is precisely the same as for our belief in external objects. These latter are real in that the sensations they make us feel appear to us as united to each other by I know not what indestructible cement and not by the hazard of the day" (p. 139).

That the author of such a remark may be a great *physicist* is very probable. But it is indisputable that only the Voroshilovs-Yushkeviches can take him seriously as a philosopher.

Materialism is declared destroyed in the name of a "theory" which at the first attack of fideism *saves itself under the wing of materialism!* For the assumption that sensations are produced in us by real objects and that "faith" in the objectivity of science is equivalent to "faith" in the objective existence of the external objects, is the purest materialism.

" . . . It may be said, for instance, that ether is no less real than any external body" (p. 139).

What a howl our Machians would have raised, had a materialist said that! How many stale witticisms would have been passed regarding "ethereal materialism." But the founder of recent empirio-symbolism declares a few pages farther on that "what is not thought is pure nothingness, since we can think only thought" (p. 142). You are mistaken, M. Poincaré; the reception your works have received proves that there are people who *can* give thought to absurdity. To that class belongs the notorious muddlehead, Georges Sorel, who maintains that the "first two parts" of Poincaré's book

on the value of science have been written in the "spirit of Le Roy" and that therefore the two philosophers can be "reconciled" as follows: The attempt to establish the identity between science and the world is an illusion; we must not ask the question whether science can conceive nature or not, for the correspondence between science and the mechanism created by us is quite sufficient.[29]

But if it suffices only to take account of Poincaré's philosophy and go on from there, it is quite imperative, however, to pause on Rey's works. We have already pointed out that the two basic tendencies in modern physics, which Rey calls the "conceptual" and "neo-mechanistic," may be reduced to the distinction between idealist and materialist epistemology. We shall see how the positivist Rey solves the problem in a manner different from the method which the spiritualist Ward, and the idealists Cohen and Hartmann followed, that is, not by seizing upon the philosophic mistakes of the recent physics, and its deviation towards idealism, but by rectifying these errors, and by proving the illegitimacy of the idealist (and fideist) inferences from recent physics.

There is to be found in all of Rey's works recognition of the fact that the recent "conceptualist" (Machian) theory of physics has been seized upon by *fideism* (pp. 11, 17, 220, 362 *ff*), *philosophical idealism* (p. 200), scepticism with its doubt concerning the rights of reason and the rights of science (pp. 210, 220), subjectivism (p. 311), etc. Therefore as the *central* problem of his works Rey quite justly takes the "opinions of the physicists as to the objective validity of physics" (p. 3). And what are the results of this analysis?

We shall begin with the basic concept, that of experience. Rey assures us that the subjective interpretation of Mach (let us for the sake of simplicity and brevity take Mach as the representative of the school which Rey terms conceptualist) is a total misunderstanding of his true views. Among the "outstanding features of the philosophy of the end of the nineteenth century" will be found an "empiricism which, having grown subtler and richer in its various shades, has finally led to fideism, to the supremacy of faith—which was once upon a time the great weapon of scepticism against the assertions of metaphysics. Did not this come about because of the fact that little by little, by means of hardly perceptible shadings

[29] Georges Sorel: *Les préoccupations metaphysiques des physiciens modernes*, 1907, pp. 77, 80, 81.

in the meanings of the words, they deviated from the real meaning of 'experience'? Indeed, experience, if taken in its conditions of existence, in that experimental science which makes it more exact and refined, leads us to necessity and to truth" (p. 398). It is beyond doubt that Machism, in the broad sense of the word, is nothing but a perversion, by means of imperceptible shadings, of the real sense of the word "experience"! But does Rey, who accuses only the fideists of perversion, but not Mach himself, correct this perversion? Here we have it: "Experience is by definition the cognition of the object. In physical science this definition is more in place than it is elsewhere. . . . Experience is that which our spirit does not command, that which our desires, our volition, cannot change, that which is given and which we do not make ourselves. Experience is the object 'in front of' [*en face du*] the subject" (p. 314).

This is an example of the defence of Machism by Rey! How ingeniously perspicacious was Engels, who characterised the recent type of adherents of philosophic agnosticism and phenomenalism by the expression "shamefaced materialists." Rey, the positivist and ardent phenomenalist, is a superb example of this type. If experience means the "cognition of the object," if "experience means the object before the subject," if experience means that "something external exists and necessarily exists," it evidently reduces itself to materialism! Rey's phenomenalism, his emphatic and ardent assertion that nothing is given except sensations, his statement that the objective is equivalent to what has a common significance, etc., etc.—all this is only a figleaf, an empty verbal shield of materialism, since we are told that "the objective is that which is given us from the outside, which is imposed upon us by experience; it is that which we do not make but which is made independently of us and which largely makes us" (p. 320). Rey, in defending "conceptualism," destroys it! The refutation of the idealist implications of Machism has been reached only by interpreting Machism as a "shamefaced materialism." Having recognised the distinctions between various tendencies in modern physics, Rey labours hard to do away with all distinctions allegedly in the interests of materialism. Of the school of neo-mechanism, for instance, Rey says that it does not admit the "least doubt, the least uncertainty" as to the objectivity of physics (p. 237): "Here [on the basis of the doctrines of this school] you feel far removed from all the circuitous

routes you were compelled to traverse from the point of view of other conceptions of physics in order to arrive at the position of this objectivity" (p. 237).

It is this "circuitous route" of Machism which Rey conceals, over which he throws a veil in all of his expositions. The fundamental characteristic of materialism lies in that it arises from the objectivity of science, from the recognition of objective reality, reflected by science, while idealism *needs* these "circuitous" methods in order to "infer" the objectivity of nature, in one way or another, from spirit or consciousness, from the "psychic." "The neo-mechanists, the prevailing school in physics, *believe* in the *reality* of the external world" (p. 234). For this school, "theory wishes to be an analogue [*le decalque*] of the object" (p. 235). True. And this fundamental basis of the "neo-mechanist" school is nothing but the foundation of the *materialist* theory of knowledge. No renunciation of materialism by Rey, no assurances that the neo-mechanists are also phenomenalists, can mitigate this basic fact. The difference between the neo-mechanists (materialists, who are more or less shamefaced) and the Machians is that the latter deviate more strongly from this theory of knowledge, and inevitably succumb to fideism.

Take the relation of Rey to Mach's doctrines on causality and necessity in nature. Only at first sight, Rey assures us, does it appear that Mach is "approaching towards scepticism" and "subjectivism" (p. 76); this "ambiguity" (p. 115) disappears if we take the view of Mach as a whole. And Rey, taking it as a whole, adduces a series of quotations from the *Wärmelehre* and the *Analysis of Sensations*, and pauses especially on the chapter devoted to causality in the former book, but is *cautious enough to refrain from citing the most decisive remark of all, the declaration of Mach that there is no physical necessity; but only a logical necessity!* To such a method of exposition we can only say that it is not an interpretation of Mach, but an embellishment upon him; that it is an obliteration of the differences between "neo-mechanism" and Machism. Rey's conclusion is that "Mach continues the analysis and accepts the findings of Hume, Mill and all the other phenomenalists, according to whom the causal relation has no substantiality but is only a mental habit. He accepts the fundamental thesis of phenomenalism from which only one consequence follows —that nothing exists save sensations. But Mach adds as a purely

objective modification that "science, analysing sensations, discovers their permanent and common elements which, being abstractions, have the same reality as the sensations themselves, for they are taken from sensations by means of perceptual observation. And these common and permanent elements such as energy and its various forms, are the foundations for the systematisation of physics" (*loc. cit.*, p. 117).

This means that Mach accepts Hume's subjective theory of causality and interprets it in an objective sense! Rey evades the task of defending Mach by referring to his inconsistency, and reducing it to something like the following: In the "real" interpretation of experience, we are led to "necessity." If experience is what is given to us from the outside, and if the necessity of nature and its laws are also given to man from the outside or from objectively existing nature, then it is obvious that the difference between Machism and materialism vanishes. Rey defends Machism against "neo-mechanism" in such a fashion that it capitulates along the entire line to the latter. The word "phenomenalism" is retained and defended but not the substance of the doctrine. Poincaré, for instance, in the spirit of Mach, derives the laws of nature including the tri-dimensionality of space; but this is done on grounds of "convenience." But this does not at all leave any place for "indetermination," Rey hastens to "correct" us. Nay, "convenient" here means "*adaptation to the object*" (Rey's italics, p. 196). Indeed, what a superb differentiation between the two schools! What a "refutation" of materialism! . . . "If Poincaré's theory logically separates itself by an impassable gulf from the ontological interpretation of mechanism [that is, from the doctrine that theory is a copy of the object] . . . if it is to serve as a support for philosophic idealism, then at least, on scientific grounds, it must be compatible with the general evolution of classical ideas, with the tendency which regards physics as objective knowledge, as objective as experience, that is, as the sensations out of which experience is built up" (p. 200).

On the one hand, we must admit; on the other hand, we must confess. On the one hand, an impassable gulf separates Poincaré from neo-mechanism, although Poincaré stands *in between* Mach's conceptualism and neo-mechanism, so that it turns out that Mach is not separated by an impassable gulf from neo-mechanism. On the other hand, according to Rey himself who holds the viewpoint of "mechanism," Poincaré fully agrees with classical physics. On

the one hand, the theory of Poincaré is capable of serving as a support to philosophic idealism; on the other hand, it is compatible with the objective interpretation of the word "experience." On the one hand, these bad fideists perverted the meaning of experience by the aid of expressions which imperceptibly deviated from the correct view that "experience is the object"; on the other hand, the objectivity of experience means only that experience is sensation, a statement with which both Berkeley and Fichte agree!

Rey blundered because he set himself the impossible task of "reconciling" the opposition between the materialist and the idealist schools in recent physics. He set out to subvert the materialism of the neo-mechanist school, having already attempted to reduce the views of physicists, who regard their theory as a copy of the object, to phenomenalism.[30]

Rey also attempts to tone down the idealism of the conceptualist school by eliminating the most emphatic idealistic declarations of its adherents and interpreting the rest from the point of view of a shamefaced materialism. Rey's estimate, for example, of the theoretical significance of the differential equations of Maxwell and Hertz shows to what extent his repudiation of materialism is fraudulent and fictitious. For the Machians the circumstance that these physicists limit their theory to a system of equations, is a refutation

[30] The "conciliator," Rey, not only obscured the materialist statement of the question at issue, but even left out the emphatic materialistic declarations of the French physicists. He did not mention, for example, Alfred Cornu (died in 1902). That physicist met the Ostwaldian "destruction or conquest [*Ueberwindung*] of scientific materialism" with contemptuous remarks about pretentious journalistic treatments of the question (*cf. Révue générale des sciences*, 1895, pp. 1030-1). At the international congress of the physicists in Paris in 1900, Cornu said: " . . . The more we conceive the phenomena of nature, the more developed and precise becomes the brave Cartesian view of the world-mechanism: in the physical world there is nothing save matter and motion. The problem of the unity of the various physical forces . . . has again been put into the foreground after the great discoveries made at the end of the nineteenth century. The attention of our modern leaders of science, Faraday, Maxwell, Hertz (to limit onlyself only to the famous physicists who have passed away) was chiefly directed to defining nature more accurately and to hypostasising the properties of imponderable matter, the vehicle of the world-energy. . . . The return to Cartesian ideas is obvious" . . . (*Rapport présentés au Congress International de Physique*, 1900, § 1, Vol. IV, p. 7). Lucien Poincaré in his book *La physique moderne* (1906) justly remarks that this Cartesian idea was taken up and developed by the Encyclopædists of the eighteenth century (p. 14). But neither this physicist, nor Cornu, knew how the dialectical materialists, Marx and Engels, had purified the fundamental assumptions of materialism from the one-sided mechanistic materialism of the eighteenth century.

of materialism—there are only equations, there is no matter, no objective reality, only symbols. Boltzmann refutes this view, quite aware of the fact that he is refuting phenomenalist physics. Rey refutes this view in an intended defence of phenomenalism. He says: "We cannot refuse to regard Maxwell and Hertz as 'mechanists' merely because they limited themselves to equations, similar to the differential equations of Lagrange's dynamics. The equations do not prevent us, according to Maxwell and Hertz, from constructing a mechanical theory of electricity out of real elements. On the contrary, the fact that we can represent electrical phenomena in a theory whose form is identical with the general form of classical mechanics, is proof of the possibility" (pp. 252-3). The indefiniteness of the present state of the problem will in a measure diminish when the *nature* of these *quantities* which enter as elements in the equations will have become more precise (p. 253). Failure to investigate these and other forms of material motion is not taken by Rey as a reason for denying the materiality of motion. "The homogeneity of matter" is regarded (p. 262), not as a postulate, but as a result of experience and evolution of science; "the homogeneity of the object of physics" appears as the condition of the possibility of measurement and mathematical calculation.

Here is Rey's estimate of the criterion of practice in the theory of knowledge: "Contrary to the postulates of scepticism, we have a right to say that the practical validity of science is derived from its theoretical validity" (p. 368). That this sceptical attitude is unequivocally accepted by Mach, Poincaré and their entire school—of this Rey prefers not to speak. . . . "Theoretical and practical validity are two inseparable and strictly parallel aspects of objective validity. To say that a law of nature has practical validity . . . is to say that it has an objective significance. . . . To act on an object implies a modification of the object, implies a reaction upon the part of the object which conforms to the expectations of predictions, which are contained in the proposition and in virtue of which we acted on the object.

"Hence, these expectations or this anticipation contain elements controlled by the object and our action. . . . In these diverse theories there is thus an objective part" (p. 368). This is materialism through and through! All other theories of knowledge, especially Machism, deny the objective, deny that the criterion of practice does not depend upon man and mankind.

The result is this: Although Rey did not approach the question from the same angle as did Ward, Cohen and the others, he arrived at the same results, namely, the recognition that at the basis of the division between the two chief schools in modern physics lay the difference between the materialistic and idealistic points of view.

7. *A Russian "Idealist-Physicist"*

Due to certain deplorable conditions under which I have been compelled to work, I have been almost unable to acquaint myself with the Russian literature on the subject.[31] I will, therefore, confine myself to an examination of a very important article [32] by the notorious philosophic member of the "black-hundred," Mr. Lopatin. This "true-Russian" philosophic idealist is related to the contemporary European idealists as, for example, the "Union of the Russian People" [33] is related to the western reactionary parties. Still more instructive is it to see how similar homogeneous philosophic tendencies manifest themselves in surroundings, quite different in their general culture and mode of life. Lopatin's article is, as the French say, an *éloge*—a eulogy—to the Russian physicist Shishkin, who died in 1906. Mr. Lopatin was impressed by the fact that this educated man who took such an interest in Hertz and the new physics in general was not only a right-wing Constitutional Democrat, but a strong believer in, and adherent of, the philosophy of Vladimir Soloviov, and so forth, and so on (p. 339). However, in spite of his pre-eminent "inclination" towards an interest which lies somewhere between the department of philosophy and the department of police, Mr. Lopatin has presented some material to-

[31] When Lenin returned from Siberia to which he was sent for participating in the revolutionary movement, he lived in exile in various parts of Europe. *Materialism and Empirio-Criticism* was completed in London in 1908. In the British Museum he could obtain the various German, English and French sources. But there was no possibility of getting all the latest Russian literature on the subject. Lenin regretted this circumstance knowing that a work by a Russian intended as a criticism of Russian writers would have some shortcomings on that account.—*Ed.*

[32] "The Idealist-Physicist," *Problems* of *Philosophy and Psychology*, Sept.-Oct., 1907 (in Russian).

[33] "True Russians," "Union of the Russian People," "Black Hundreds," were extreme reactionary and monarchist organizations, formed to combat the growing revolutionary movement. Although they had representation in the *Duma*, they favored its abolition and the restoration of the absolute power of the Tsar who was shorn of some of his prerogatives by the Revolution of 1905.—*Ed.*

wards the characterisation of the epistemologic views of the idealist-physicist. He writes: "He was a real positivist in his tireless and resolute criticism of the validity of the methods of scientific investigation, and of both its customary assumptions and facts, in order to discover the means and material for the construction of a complete world view. In this respect Shishkin was the antipodes of many of his contemporaries. In those articles of mine which have previously appeared in this periodical, I have often tried to reveal the heterogeneous and frequently inconsistent elements out of which a scientific view is built up. In it there enter established facts and more or less brave generalisations, which have proved convenient at the moment in one scientific domain or another, hypotheses and purely auxiliary scientific fictions. And all this is elevated to the high office of serving as incontrovertible objective truth, from whose viewpoint all other ideas and all other beliefs of a philosophic and religious nature must be judged and rejected in so far as they do not conform to what these alleged truths express. Our extremely talented thinker, the materialist Professor V. I. Vernadsky, has shown with exemplary clarity how shallow and improper are these pretences which claim to have demonstrated the scientific views of a given historical epoch to be an immobile, dogmatic system obligatory for all. Whilst the wide circles of the reading public are guilty of such a belief [Lopatin's note: "For these circles a series of popular books has been written, whose mission it is to serve as a scientific catechism for definitely answering all questions. The typical work is *Force and Matter* by Büchner, or Haeckel's *The Riddle of the Universe*], and with them also individual scientists of special branches of natural science, it is even more strange that the official philosophers themselves are guilty; for all their efforts are directed to prove that they say nothing except what has already been said before by the representatives of the several sciences, and that they are merely expressing it in their own language.

"Shishkin had no dogmatic prejudices. He was an ardent champion of a mechanical explanation in the realm of natural phenomena, but for him it was only a method of investigation."

Well, well, these are quite familiar strains! "He did not at all assume that the mechanical theory revealed the very essence of the phenomena investigated; he saw in it only the most convenient and fundamental productive method for unifying the sciences, and serving as the instrument in the realisation of scientific aims. For

him, therefore, the mechanical conception of nature and the materialistic interpretation do not at all coincide. . . ." Exactly as in the case of the authors of the *Outlines of the Marxian Philosophy!* ". . . On the contrary, he held that on questions of a higher kind, the mechanical theory ought to take a very cautious and conciliatory attitude."

In the language of the Machians this is called "transcending the obsolete and one-sided" distinction between materialism and idealism. " . . . Questions of the origin and the end of things, of the inner being of our spirit, of the freedom of the will or immortality of the soul, etc., cannot, in the actual depths of their meaning, fall within the purview of the mechanical theory—since as a method of investigation, it is confined to the limits of natural applicability, to the facts of physical experience only . . ." (p. 342). The last two lines are surely a plagiarism from Bogdanov's *Empirio-Monism.*

"Light can be regarded," wrote Shishkin in his article,[34] "as substance, as motion, as electricity, as sensation."

It is almost certain that Lopatin is right in linking Shishkin up with the positivists and that he wholly belonged to the Machian school of recent physics. Shishkin, in his lecture on light, states in effect that the various methods of approach to the nature of light constitute various methods of "organising experience" (according to Bogdanov's terminology), equally legitimate from different points of view; or that they represent various "connections of elements" (according to Mach's terminology), and that the doctrines of the physicists at any rate do not regard the theories of light as a copy of objective reality. But Shishkin argued very badly. "Light can be regarded as substance, as motion . . ." he says. But in nature there is no substance without motion and no motion without substance. The first "distinction" of Shishkin's is absurd. "As electricity. . . ." Electricity is motion of some sort of substance, hence, here also is Shishkin wrong. The electro-magnetic theory of light showed that light and electricity are forms of motion of one and the same substance (ether). "As sensation . . ." he winds up. Sensation is the image of moving matter. Save through sensations, we cannot know of the existence of forms of substance, or of forms of motion; sensations are produced by the effect of matter in motion upon our sense-organs. That is how natural science views it! The

[34] "On Psycho-Physical Phenomena from the Standpoint of the Mechanist Theory," *Problems of Philosophy and Psychology*, Bk. I, p. 127 (in Russian).

sensation of red reflects ether vibrations whose frequency approximately amounts to 450 trillions per second. The sensation of blue reflects ether vibrations whose frequency is approximately 620 trillions per second. The vibrations of the ether exist independently of our visual sensations. Our visual sensations depend upon the effects of the vibrations of ether upon our organs of vision. Our sensations reflect objective reality, something which exists independently of humanity and human sensations. That is how natural science views it! Shishkin's lecture, aimed against the materialists, is the cheapest sophistry.

8. *The Essence and Significance of Idealistic Physics*

We have seen that the epistemological questions raised by recent physics have been discussed from various aspects, in English, German and French literature. There can be no doubt that we have before us a certain international ideological movement, which does not depend upon one philosophic system or another as such, but which is the result of certain general causes, lying outside of philosophy proper. Examination undoubtedly reveals that Machism is "connected" with modern physics, but reveals also at the same time that the conception of this connection broadcasted by our Machians is *fundamentally incorrect.* As in philosophy, so in physics, the Machians slavishly follow the *fashion,* and are unable to give a general survey and evaluation of the well-known contemporary tendencies in physics from their own allegedly Marxian standpoint.

All the harangue about Mach's philosophy being a "philosophy of twentieth century natural science," of "recent scientific positivism," etc., (Bogdanov in the preface to *Analysis of Sensations,* pp. iv, xii; *cf.* Yushkevich, Valentinov, *et al.*), is characterised by a twofold misconception. In the first place, Machism is ideologically connected with only *one* school of modern science. Secondly, *and this is the chief thing*: *not what separates Machism from all other tendencies and puppet systems of idealist philosophy, but what it has in common with idealism in general,* is the element which connects Machism with this school. It suffices merely to cast a glance at the ideologic movement in question, as a *whole,* in order to grasp the truth of this statement beyond the shadow of any doubt. Take the physicists of this school, the German, Mach, the Frenchman, Henri Poincaré, the Belgian, Duhem, the Englishman, Pearson. There

is much in common among them; they have the same basis and the same direction, as each of them justly acknowledges. But neither the doctrine of empirio-criticism in general, nor Mach's belief in the "elements of the world," in particular, enter into this common basis. These views are quite foreign to the three latter physicists. The "only" thing they have in common is—philosophical idealism towards which they all, without exception, *tend* more or less consciously, more or less definitely. Turn to the philosophers who base their own doctrines upon *this school* of modern physics, who try to lay its epistemological foundations and develop its implications, and you will here again see the immanentists, the disciples of Mach, the French neo-criticists and idealists, the English spiritualists, the Russian Lopatin, in addition to the sole empirio-monist Bogdanov. They have only one thing in common, that is, all of them espouse idealism, more or less consciously, more or less definitely, be it with a rapid and eager shift towards its latent fideism, be it with a personal aversion towards it (as in Bogdanov's case).

The basic idea of the school of recent physics which we have analysed is either a denial or doubt of the objective reality given to us in our sensation and reflected in our scientific theories. Here this school departs from *materialism* (incorrectly named realism, neo-mechanism, hylo-kinetism, none of which have been consciously developed by the physicists), from the philosophy which as *generally recognised*, prevails among the physicists. It takes its point of departure, then, as a school of "idealistic physics."

To explain this queer term, it is necessary to recall one episode in the history of recent philosophy and recent science. In 1866 Feuerbach attacked Johannes Müller, the famous founder of modern physiology, and ranked him with the "physiologic idealists." [35] The idealism of this physiologist consisted in the fact that while investigating the significance of the mechanism of our sense-organs in their relation to sensations, showing, for instance, that the sensation of light is produced by a specific kind of energy affecting the eye, he was inclined to conclude therefrom that our sensations were not images of objective reality. Feuerbach very aptly characterised this as a tendency towards "physiological idealism," towards an idealist interpretation of certain findings in physiology. The "connection" between physiology and idealism, chiefly of the Kantian

[35] *Werke*, Vol. X, p. 197.

kind, had for a long time been exploited by the reactionary philosophy. Lange utilised these physiological data in the interests of Kantian idealism in order to refute materialism. And among the immanentists (whom Bogdanov incorrectly classifies as holding a position in between Mach and Kant), Rehmke especially came out in 1882 against the fictitious claims made by Kantianism regarding the supposed confirmatory evidence of physiology.[36] That a host of eminent physiologists at that time betrayed inclinations towards idealism and Kantianism, is as indisputable a fact as that a host of eminent physicists to-day gravitate towards idealism. "Physical" idealism, that is, the idealism of a certain school of physicists at the end of the nineteenth and the beginning of the twentieth century, no more "refutes" materialism, no more establishes the connection between idealism—or empirio-criticism—and natural science, than did Lange and the "physiological" idealists. This deviation towards reactionary philosophy, which was manifested on occasions, by one school of scientists, in one branch of science, is a temporary relapse, in a sickly period in the history of science,—is the effect of growing pains brought on by a *sharp* crisis in old established ideas.

The connection between modern "physical" idealism and the crisis of modern physics, as we have already pointed out above, is generally acknowledged on all sides. "The sceptical arguments, directed against modern physics," writes Rey, having in mind not so much the sceptics as the outspoken adherents of fideism, like Brunetiére, "can be essentially reduced to the proverbial argument of all sceptics—to the differences of opinion [amongst the physicists]." But these differences "do not militate against the objectivity of physics. In the history of physics as in any other history one can distinguish great periods which are characterised by a certain aspect and general form of its theories. . . . When a discovery is made which affects all fields of physics, which establishes some cardinal fact hitherto unknown or unappreciated, the entire aspect of physics is changed; a new period commences. So it was after Newton's discovery, so it was after the discoveries of Joule-Meyer and Carnot-Clausius. . . . The same result, apparently, has followed upon the discovery of radio-activity. . . . The historian who can observe events with the requisite aloofness, will without difficulty

[36] Johannes Rehmke: *Philosophie und Kantianismus*, Eisenach, 1882, p. 15 *ff.*

discern a continuity of evolution where our contemporaries see only conflicts, contradictions, and divisions into various schools. It seems that the crisis which physics has recently experienced belongs to the same category (despite the conclusions which have been drawn from this crisis by philosophical criticism). This is a typical crisis in its natural growth occasioned by great new discoveries. It is almost certain that the crisis will lead to the modification of physics; without it there could be no evolution and no progress, but it certainly will not change the scientific spirit" (pp. 370-372).

Rey, the conciliator, tries to unite all schools of modern physics against fideism! This mistake is well meant, but it is a mistake none the less, for the deviation of the school of Mach-Poincaré-Pearson towards idealism (which is but a refined fideism) is beyond dispute. And this objectivity of physics, which is at the basis of the "scientific spirit," and which Rey defends so ardently, as opposed to the spirit of fideism, is nothing but a "shamefaced" formulation of materialism. The basic materialistic spirit of physics, as of the whole of modern science, will overcome all sorts of crises, provided the necessary change from metaphysical materialism to dialectical materialism takes place.

Rey, the peacemaker, very often silently glides over the fact that the crisis of modern physics lies in its deviation from a direct, decisive and definite recognition of the objective validity of its theories. But the facts are stronger than all his conciliatory efforts. "The mathematicians," writes Rey, "who are accustomed to deal with a science in which the object, at least on the surface, is created by the mind of the scientist or in which, at any rate, concrete appearances are not admitted into investigations, have given expression to an abstract conception of physics, and have tended to reduce it to mathematics, by applying the general theory of mathematics to physics. . . . All the experimenters have denounced the invasion of the mathematical spirit into the methods of judging and understanding physics. And is it not due to this influence, which is none the less powerful for being concealed, that the uncertainty, the hesitation of thought regarding the objectivity of physics is to be attributed, together with those circuitous ways by which objectivity is reached and the obstacles which are surmounted in order to prove it. . . ?" (p. 227).

This is very well said. "Hesitation of thought" in the question

of the objectivity of physics—here lies the substance of fashionable "idealistic physics."

" . . . The abstract fictions of mathematics seem as if they erected a screen between physical reality and the manner in which the mathematicians understand this science. They vaguely feel the objectivity of physics . . . they desire before anything else to be objective when they engage in physics; they endeavour to lean upon reality, but their old habits assert themselves. And so in the course of recent scientific theory up to and including energetics—which desired to construct the world with a fewer number of hypotheses than the old mechanical physics, which was satisfied to copy the perceptual world, and not to re-create it—we constantly have had to deal with the theories of mathematicians. . . . The mathematicians have done everything they could to save the objectivity of physics, for without objectivity—they understand this very well—there cannot be any talk about physics. . . . But the complexity of their theories, their circuitous methods have left an uneasy feeling. They are too artificial, too far-fetched, too fictitious; the experimenter does not feel that instinctive confidence in them which is developed through constant contact with physical reality. . . . This is what all the physicists essentially claim, those who are primarily physicists—and those who are exclusively physicists; this is what the entire neo-mechanist school claims. . . . The crisis of physics has been precipitated through the permeation of the mathematical spirit. The progress of physics in the nineteenth century, on the one hand, and the progress of mathematics on the other, led to the close proximity of these two sciences. . . . Theoretical physics became mathematical physics. . . . Then began the period of formal physics, that is, of mathematical physics, which became purely mathematical, not as a branch of physics but as a branch of mathematics. In this new phase the mathematician, accustomed to have the conceptual (purely logical) elements constitute the sole subject matter of his work, found himself cramped before the rough, material elements which he found not sufficiently pliable for formal analysis. He therefore could not avoid abstracting from them as much as possible, was inclined to postulate them as absolutely immaterial as purely logical, or even to ignore them altogether. The elements as real, objective data, *i. e.*, as physical elements, completely vanished. There remained only the formal relations which are represented by differential equations. . . . If the mathematician

be not deceived by his own constructive work, he will be able to find the connections between theoretical physics and actual experience, but at first sight it seems to an untutored eye that the entire thing is an arbitrary theoretical construction. . . . The concept, the idea, replaces real elements everywhere. . . . Thus, in virtue of the mathematical form, accepted by theoretical physics . . . the illness, the crisis of physics and its apparent separation from objective facts, are historically explained" (pp. 228-232).

Such is the first cause of "idealistic physics." The reactionary claims that have been put forward are really the consequences of progress within science. The great success of science, its discovery of the homogeneous and simple elements of matter, whose laws of motion are subject to formulæ, caused matter to be forgotten by the mathematicians. "Matter disappears," only equations remain. In a new stage of development and, as it were, in a new way, we get the old Kantian idea: reason prescribes laws to nature. Herman Cohen who rejoices, as we have seen, over the idealistic spirit of recent physics, goes so far as to advocate the introduction of higher mathematics into schools in order to implant in the high-school students the spirit of idealism, which is in danger of being extinguished in our materialistic age.[37] Of course this is a ridiculous fancy of a reactionary and, except for the temporary infatuation with idealism by a limited number of specialists, there really is nothing to it, nor can there be anything to it. But what is highly characteristic is how these drowning faiths clutch at a straw, and with what cunning the representatives of the educated bourgeoisie artificially attempt to sustain and find a place for fideism whose hold on the lower strata of the masses is due to ignorance, backwardness, and to the absurd and wild contradictions of capitalist society.

Another cause of "idealistic physics" is the principle of *relativity*, the relativity of science, a principle which in a period of bankruptcy of old theories, imposes itself with special force upon physicists, and which, due to *ignorance of dialectics*, leads to idealism.

The question of the correlation between relativism and dialectics is of the utmost importance in explaining the theoretical misfortunes of Machism. Here is Rey, for instance, who, like the rest of the European positivists, has no idea of Marxian dialectics at all. He employs the word dialectics exclusively in the sense of idealist

[37] A. Lange: *Geschichte des Materialismus*, 5th ed., 1896, p. xlix.

speculation. Feeling, therefore, that the new physics went astray on the question of relativism, he helplessly flounders in an attempt to distinguish between moderate and immoderate relativism. Of course, "immoderate relativism borders on actual scepticism, in theory if not in practice" (p. 215). But, as you see, in Poincaré there is no "immoderate" relativism. One imagines that by adding to the mess, a pinch of relativism weighed on an apothecary's scale, the position of Machism can be improved!

The only correct way of theoretically positing the question of relativism, has been expressed by the dialectic materialism of Marx and Engels. Ignorance of it must certainly lead from relativism to idealism. Failure to understand this fact makes Mr. Berman's absurd book *Dialectics from the Standpoint of The Modern Theory of Knowledge* (in Russian) valueless. Mr. Berman repeated the old absurdities about the dialectical philosophy which he completely failed to understand. We have already seen that all the Machians, *at each step*, manifest similar ignorance of the theory of knowledge.

All the old truths of physics, including those which were regarded as the most firmly established and incontestable, have proven to be relative truths. *This means* that there is no such thing as objective truth independent of humanity. Thus argue not only the followers of Machism but all adherents of "idealistic physics" in general. That absolute truth results from the sum-total of relative truths in the course of their development; that relative truths represent approximate reflections of an object which exists independent of humanity; that these reflections continually approach the truth; that in each scientific truth, irrespective of its relativity, there is an element of absolute truth—all these propositions, obvious to anyone who has reflected on Engels' *Anti-Dühring*, remains for the "modern" theory of knowledge a closed book with seven seals.

Such works as Duhem's,[38] or Stallo's,[39] which Mach especially recommends, show very clearly that these "idealistic physicists" ascribe most significance to the hypothesis of the relativity of our sciences, and vacillate for the most part between idealism and dialectical materialism. Both authors, who belong to different periods, and who approach the question from different viewpoints (Duhem's specialty is physics, in which field he worked for twenty

[38] P. Duhem: *La theorie physique, son objet et sa structure*, Paris, 1906.
[39] I. B. Stallo: *The Concepts and Theories of Modern Physics*, London, 1882.

years; Stallo, an erstwhile ardent Hegelian, spurned his own book on natural philosophy [published in 1848], which was conceived in the old Hegelian spirit), combat the atomistic mechanistic conception of nature most energetically. They establish the limitations of such a conception, maintain the impossibility of recognising it as the limit of our knowledge, and point to the ossified and antiquated doctrines of many writers who cling to this conception of physics. This defect in the *old* materialism is undeniable; its failure to appreciate the relativity of all scientific theories, its ignorance of dialectics, its exaggeration of the mechanistic viewpoint—these were Engels' reproaches against the earlier materialists. But Engels, unlike Stallo, was able to abandon the Hegelian idealism, and yet retain the kernel of sound insight in Hegel's dialectics. Engels rejected the old metaphysical materialism for *dialectical* materialism, and not for a relativism, which plays into the hands of subjectivism. "The mechanical theory," says Stallo, "in common with all metaphysical theories, hypostasises partial, ideal, and, it may be, purely conventional groups of attributes, or single attributes, and treats them as varieties of objective reality" (p. 150). This is quite true, if you recognise the primary fact of objective reality and are combating metaphysics as opposed to dialectics. Stallo does not make this clear himself. He has no grasp of materialist dialectics and therefore falls from relativism into subjectivism and idealism.

The same with Duhem. At an enormous expenditure of labour, in a series of interesting and valuable examples from the history of physics (a type of study which one frequently encounters in Mach), he proves that "each law of physics is temporary and relative because it is approximate" (p. 280). Well, he is trying to force his way through an open door, reflects the Marxist while reading the lengthy treatises on this subject. But the trouble with Duhem, Stallo, Mach and Poincaré is that they do not see that the door had already been opened by dialectical materialism. Hence unable to give a correct expression to relativism, they relapse into idealism. "The laws of physics, properly speaking, are neither true nor false, but approximate," writes Duhem (p. 272). In this "but" there already lies the germ of an error. It also marks the beginning of an attempt to eliminate the difference between a scientific theory which approximately reflects the object *i. e.*, approaches objective truth, and arbitrary, phantastic, and purely con-

ventional theories, as, for example, religious doctrines and the systematised rules of chess.

This error goes so far with Duhem that he declares the question, as to whether "material reality" corresponds to perception, to be metaphysics (p. 10). Away with all questions about reality; our ideas and hypotheses are mere signs, "arbitrary" (p. 27) constructions, etc. There is only one step from this to idealism, to the "physics of the believer," which Pierre Duhem preaches in true Kantian fashion (*cf.* Rey, p. 162; also p. 160). And the good-natured Adler (Fritz), also a Machian claiming to be a Marxian, had no keener "correction" to offer than this: Duhem eliminates the notion of "realities, hidden beyond appearance, only as objects of theory, but not as *real objects*."[40] This is the familiar criticism of Kantianism made from the standpoint of Hume and Berkeley.

Of course, there can be no talk of Duhem's being a conscious Kantian. He merely *vacillates*, as does Mach, without knowing how to support his relativism. At many points he comes very close to dialectical materialism. He says that we know sound as "it exists in relation to us but not as it exists in itself, that is, in bodies which cause sound. This reality, of which our sensations disclose only the external, superficial effects, affords the possibility of conceiving a theory of acoustics. They tell us that where our perceptions register the effects which we call sound, there really exists a rapid, periodic, wave movement (p. 7). Bodies are not symbols of sensation, but sensations are symbols (rather images) of bodies. The development of physics gives rise to a constant struggle between nature which continually offers new material; as reason which continually attempts to cognise it" (p. 32); nature is infinite and its smallest particle, the electron, is infinite, and reason is engaged in an infinite transformation of "things-in-themselves" into "things-for-us." "The struggle between reality and the laws of physics will last infinitely; for each law which physics will formulate, sooner or later reality will produce a rude refutation, in the form of an inexplicable fact; but physics will continually modify, change, and qualify the refuted law" (p. 290). This would be quite an adequate exposition of dialectical materialism, if the author firmly clung to the conception of a reality existing independent of humanity. ". . . The theory of physics is not a purely artificial system, to-day convenient, to-morrow worthless; it is a classification, becoming more and more

[40] "Translator's note" to the German translation of Duhem, Leipzig, 1908.

natural, a reflection growing clearer and clearer, of those realities which the experimental method cannot meet face to face" (p. 445).

Duhem, the Machian, in this last phrase flirts with Kantian idealism; it appears as if a path has been opened up for another method besides an "experimental" one, as if we cannot directly, and immediately perceive "thing-in-themselves" face to face. But if the theory of physics becomes more and more natural, then "nature" and reality, "reflected" by this theory exists independently of our consciousness—which is precisely the view of dialectic materialism.

In a word, the "physical" idealism of to-day, just as the "physiological" idealism of yesterday merely signifies that one school of naturalists in one branch of science have succumbed to reactionary philosophy, without being able to rise directly and immediately above metaphysical materialism and to arrive at dialectic materialism.[41] Modern physics has made and will continue to make this step, but it reaches the only true method and the only true philosophy of natural science, not directly but through zigzag progress, not consciously but instinctively, not clearly aware of its "final goal," but continually drawing nearer to it, through groping, vacillating, even retrogressive motion. Modern physics is in a state of confine-

[41] The famous chemist William Ramsay says: "I have been frequently asked: 'But is not electricity a vibration? How can wireless telegraphy be explained by the passage of little particles or corpuscles?' The answer is: 'Electricity is a *thing;* it *is* these minute corpuscles, but when they have any object, a wave, like a wave of light, spreads through the ether, and this wave is used for wireless telegraphy!'" (William Ramsay: *Essays, Biographical and Chemical,*" London, 1908, p. 126). Having spoken about the transformation of radium into helium, Ramsay remarks: "At least one so-called element can no longer be regarded as ultimate matter, but it is itself undergoing change into a simpler form of matter" (p. 160). "Now it is almost certain that negative electricity is a particular form of matter; and positive electricity is matter deprived of negative electricity—that is, minus this electric matter" (p. 176). "Now what is electricity? It used to be believed, formerly, that there were two kinds of electricity, one called positive and the other negative. At that time it would not have been possible to answer the question. But recent researches make it probable that what used to be called negative electricity is really a substance. Indeed the relative weight of its particles has been measured; each is about one seven-hundredth of the mass of an atom of hydrogen. . . . Atoms of electricity are named 'electrons'" (p. 196). If our Machians, who write books and articles on philosophical subjects, were capable of thinking they would understand that the expression "matter has disappeared," "matter has been reduced to electricity," etc., is only a meaningless epistemological expression of the truth that science has succeeded in discovering new forms of matter, new forms of material motion, and has succeeded in reducing the old and the familiar to the new.

ment; it is giving birth to dialectical materialism. The child-birth is painful. Besides a living being, it inevitably brings forth certain dead products, refuse which should be sent where it belongs. To the category of such refuse belong the entire school of "idealistic physics," the whole of empirio-critical philosophy together with empirio-symbolism, empirio-monism, etc., etc.

CHAPTER SIX

EMPIRIO-CRITICISM AND HISTORICAL MATERIALISM

THE Russian Machians, as has already been seen, are divided into two camps: Mr. Chernov and the collaborators of the *Russkoye Bogatstvo* [1] are genuine and consistent opponents of dialectical materialism, both in philosophy and history. The other company of Machians, in whom we are more interested, call themselves Marxists and try in every way to assure their readers that Machism is compatible with the historical materialism of Marx and Engels. But these assurances remain only assurances, for not one Machian, desirous of being regarded as a Marxist, has made the slightest attempt to expound, even in outline fashion, the actual tendencies of the founders of empirio-criticism in the field of social science. We shall briefly pause on this question, taking up at first the statements of the German empirio-criticists, to be found in the relevant literature, and then those of their Russian disciples.

1. *The Excursion of the German Empirio-Criticists into the Domain of Social Science*

In 1895, when Avenarius was still alive, there appeared, in the philosophic periodical edited by Avenarius, an article by his disciple F. Blei, under the title "Die Metaphysik in der National-Oekonomie." [2] Since all the founders of empirio-criticism have combated the "metaphysics" not only of explicit, conscious materialism, but of the natural sciences, which instinctively cling to the viewpoint of the materialist theory of knowledge as well, the disciple took it upon himself to wage war on the metaphysics of political economy. This war has been directed against the

[1] A Russian monthly magazine, published at St. Petersburg from 1880 to 1914; organ of the radical intelligentsia of populist-socialist tendencies.—*Ed.*

[2] *Vierteljahrsschrift für wissenschaftliche Philosophie*, 1895, Vol. XIX, pp. 378-90.

various schools of political economy, but at present we are interested only in the character of the empirio-critical argument against the school of Marx and Engels.

"The purpose of the present investigation," writes Blei, "is to show that the whole of modern political economy operates with metaphysical assumptions in its interpretation of the phenomena of economic life; it 'derives laws' of economics from the 'nature' of its subject matter, and man appears here only as something accidental in relation to such 'laws'. . . . With all its modern theories political economy rests on metaphysical grounds, all its theories are unbiological and, therefore, unscientific, thus having no validity for knowledge. . . . The theoreticians do not know on what ground they build their theories, and of what soil the fruits of those theories are. They deem themselves realists who operate without any assumptions, for they are supposedly engaged in 'sober,' 'practical,' 'tangible' [*sinnfällige*] economic phenomena. . . . And all of them have those native resemblances with many tendencies in physiology, which are regarded as cognitive characteristics of children (in our case the physiologists and economists) of common parentage (metaphysics and speculation). One school of economists analyses the 'phenomena' of 'political economy' [Avenarius and his school put ordinary words in quotation marks as if to imply that they, true philosophers, understand the essentially 'metaphysical character' of such a vulgar use of words, unrefined by 'epistemologic analysis'] without putting it into relation with the behaviour revealed by the conduct of individuals: The physiologists dismiss the behaviour of the individual in their investigations as being an 'effect of the soul,' while economists of that tendency declare the behaviour of individuals to be negligible in relation to the 'immanent economic laws' [pp. 378-379]. With Marx, the theory progresses from these inferred processes to economic laws, although the laws are supposed to have existed, in the primary period of vital series, while the economic processes take place at the final period. . . . Political economy was transformed by the economists into a transcendental category, in which they discovered such 'laws' as those of 'capital' and 'labour,' 'rent,' 'wages' and 'profit.' Man was transformed by them into a Platonic idea of a 'capitalist,' or a 'worker,' etc. Socialism ascribed to the 'capitalist' the property of being 'greedy for profit,' liberalism ascribed to the worker the property of being 'pretentitous,' and both laws

have been explained as sequences of the 'law of action of capital' [pp. 381-382].

"Marx came to the study of French socialism and political economy with a socialist *Weltanschauung*, and his purpose was to provide a 'theoretical foundation' for it in order to 'secure' its initial value.

Marx found in Ricardo the law of value . . . but the inferences which the French socialists had drawn from Ricardo could not satisfy Marx in his endeavour to 'secure' the initial value which unequally distributed had given rise to differences in the state of life.—These inferences had already entered as a component part into his conception of value as the aspect of 'indignation against the exploitation of the workers,' etc. The inferences had been refuted as 'being formally untrue in an economic sense,' for they are simple 'applications of morality to political economy.' But what is untrue in the formal economic sense, may be true in the historic sense. If the moral consciousness of the mass declares a certain economic fact unjust, then it is proof that the fact has outlived itself, that other economic facts have appeared, due to which this fact becomes intolerable and incapable of being observed. Behind the formal economic injustice a true economic content 'may, therefore, be latent' (Engels in the preface to *Poverty of Philosophy*).

"In this quotation," Blei continues to cite from Engels, "the middle section [*medialabschnitt*] of the dependent series which interest us here is taken away [*'abgehoben'*—Avenarius' technical term for 'having reached consciousness']. After the 'recognition' that behind the 'moral consciousness of injustice' the 'economic factor' may be latent, comes the last section [*Finalabschnitt:* the theory of Marx is the statement, the *E*-value, the vital difference which passes through three stages, three divisions, the beginning, middle and end, *Initialabschnitt, Medialabschnitt, Finalabschnitt*] . . . that is 'the consciousness' of that 'economic factor.' Or, in other words, the task now is to 'find again' the initial value, that is, the *Weltanschauung* in the 'economic facts' for 'securing' this initial value. This definite variation of the dependent series already contains the Marxian metaphysics, regardless of whether what is 'cognised' appears or not in the final division (*Finalabschnitt*). 'The socialist conception' as an independent *E*-value, the 'absolute truth,' is subsequently grounded upon a 'special' theory of knowledge, by means

of the economic system of Marx and the materialist theory of history. The 'subjectively true' in the Marxian doctrine, through the conception of surplus value, finds its 'objective truth' in a theory of knowledge of 'economic categories.'—Hence, the securing of initial values is completed and metaphysics is subjected to a critique of knowledge by way of supplement" (pp. 383-6).

The reader is probably indignant that we have so long indulged in this impossibly vulgar word jugglery, this quasi-erudite buffoonery in the garb of Avenarius' terminology. But *wer den Feind will verstehen, muss im Feindes' Lande gehn.* And the philosophical journal of Avenarius is really hostile territory for Marxists to venture into. And we invite the reader to overcome for a while his justified aversion to the clowns of bourgeois science and to analyse the arguments of the disciple and collaborator of Avenarius.

Proof number one: Marx is a "metaphysician" who did not grasp the epistemological "critique of ideas," who did not elaborate the general theory of knowledge and who surreptitiously introduced materialism into his "special theory of knowledge."

There is nothing original in this argument of Blei's. We have already seen hundreds of times that *all* the founders of empirio-criticism and *all* the Russian Machians have accused materialism of "metaphysics," that is, they repeat the stereotyped arguments of the Kantians, Humeans and idealists against materialistic "metaphysics."

Proof number two: Marxism is as "metaphysical" as natural science (physiology). Nor is Blei "responsible" for this proof. Rather are Mach and Avenarius, for they declared war against "naturo-historical metaphysics," dubbing the instinctively-materialistic theory of knowledge with that name to which (according to their own admission and the judgment of those who are even slightly acquainted with the question) the prevailing majority of naturalists adhere.

Proof number three: Marxism avers "personality" to be a negligible quantity, an accident, subject to certain "immanent economic laws"; it is characterised by an absence of analysis of the immediately given. This proof repeats *in toto* the empirio-critical idea of "essential co-ordination," that nest of *idealist* duplicity in Avenarius' theory. Blei is absolutely right when he says that it is impossible to find the slightest notion of this idealist confusion

in Marx and Engels, and that from the standpoint of such confusion one must *completely* reject Marxism from the very beginning, in its most fundamental philosophic assumption.

Proof number four: The theory of Marx is "unbiological," is innocent of "vital-differences" and of similar factitious biological terms which constitute the "science" of the reactionary professor, Avenarius. Blei's argument is correct from the standpoint of Machism, for the gulf which separates the theory of Marx from the "biological" baubles of Avenarius is indeed immediately evident. We shall soon see how those Russian Machians, who are so intent upon being considered Marxists, actually followed in the footsteps of Blei.

Proof number five: Concerning the partiality of Marx's theory and his preconceived solution. The *whole* of empirio-criticism, and not merely Blei's brand of it, pretends to be impartial both in philosophy and in social science; it adheres neither to socialism nor to liberalism. Its task is not to make clear the fundamental and irreconcilable differences between the philosophy of materialism and idealism, but to endeavour to rise *above* them. We have traced this tendency of Machism in a whole series of problems dealing with epistemology, and we ought not be surprised to encounter it in sociology.

Proof number six: The mockery at "objective" truth. Blei sensed at once, and quite correctly, that historical materialism and the entire economic doctrine of Marx thoroughly reflect the recognition of objective truth. And Blei correctly expressed the drift of the doctrines of Mach and Avenarius when, from the very start, he refuted Marxism precisely because of its emphasis on the idea of objective truth, when, at one stroke, he proclaimed that there was really nothing behind the teaching of Marxism save the "subjective" views of Marx.

And if our Machians renounce Blei (as they surely will), we shall tell them: "You must not accuse the mirror if it shows a wry face." Blei is the mirror, which *correctly* reflects the fundamental tendencies of empirio-criticism, and the possible renunciation of the Machians would only bear witness to their noble intentions and their absurd eclectic endeavours to connect Marx and Avenarius.

We shall proceed from Blei to Petzoldt. If the former is a mere disciple, the latter, however, is declared to be "one of the masters" by no less an outstanding empirio-criticist than Lessevich.

If Blei directly raises the question of Marxism, then Petzoldt, who does not condescend to take Marx or Engels into account, expounds the positive views of empirio-criticism in sociology, thus offering an opportunity to compare them with Marxism.

The second volume of Petzoldt's *Einführung in die Philosophie der reinen Erfahrung* is entitled "Auf dem Wege zum Dauernden." The author assumes as the basis of his investigation the tendency towards stability. "The final, stable state of humanity, in its main features, can be revealed on its formal side. Thus we arrive at ethics, esthetics and the formal theory of knowledge" (p. iii). "Human development bears its goal in itself"; it tends towards a "perfect state of equilibrium" (p. 60). Evidence for this is abundant and varied. For example, is it not true that many violent radicals become "more sensible" with old age, that they reach a stage of emotional equilibrium? True, such "premature stability" (p. 62) is the property of a Philistine. But do not Philistines comprise the "compact majority"? (p. 62).

The inference of our philosopher is this: "*The fundamental goal of all our reasoning and creative activity, is stability*" (p. 72). An explanation follows: "Many cannot bear to see the picture hanging crooked on the wall or the key lying obliquely on the table. And such people are not necessarily pedants. *They have a feeling that something is not in order*" (p. 72, Petzoldt's italics). In a word, the "tendency toward stability is a tendency toward the ultimate, towards the final stage" (p. 73). All this is taken from the fifth chapter of Volume II, entitled "Die Psychische Tendenz zur Stabilität." The proofs of this tendency are, indeed, most weighty! For instance: "The endeavour to attain the topmost, to reach the highest in the primeval, spatial sense, expresses itself in those who like to climb mountains. They are not always prompted by a desire to perceive the outlying landscape or by the joy of physical exercise in climbing in free air and open sky, but by the longing, deeply ingrained in every organic being, to pursue the direction of activity once taken until the natural purpose has been attained" (p. 73). Another instance: What sums of money people pay to accumulate a complete collection of postage stamps! "One is dazed upon looking at the price list of the dealer in postage stamps. . . . And yet nothing can be more natural and conceivable than this urge for stability" (p. 74).

Philosophically untutored people have no conception of the

breadth of principles of stability or economy of thought. Petzoldt develops in detail his "theory" for the benefit of the ignorant. "Sympathy is an expression of the immediate need for a state of equilibrium," runs the thought of paragraph 28. . . . "Sympathy is not a repetition, a duplication of the observed suffering, but a suffering on account of this suffering. . . . The qualitative immediacy of sympathy must be greatly emphasised. If we recognise it, we admit that the welfare of others can just as genuinely and naturally interest a man as his own welfare. Thus we reject every utilitarian and eudemonistic foundation of morality. Human nature, precisely because of its yearning for stability and rest, is basically not evil, but is characterised by a readiness to help the needy.

"The immediacy of sympathy is frequently manifested in immediate help. In order to save another, people often throw themselves into the water to lend a helping hand to the drowning one without thinking of their action. The appearance of a person who struggles with death is unbearable and compels the one, who offers help, to forget his other duties, to jeopardise his own existence and that of his nearest, in order to save the useless life of some degraded drunkard; sympathy can, under certain circumstances, provoke action which could not be justified from a moral viewpoint. . . ."

And hundreds and thousands of pages of empirio-critical philosophy are filled with such impossible vulgarities.

Morality is inferred from the conception of "moral stability" (the second section of Volume II, "Die Dauerbestände der Seele"; chapter 1, "Vom Ethischen Dauerbestände"). "The state of stability contains no conditions of change, not even in any of its components. From this it follows, without any further argument, that his state leaves no possibility for *war*" (p. 202). "Economic and social equality follows from the idea of the final, stable state" (p. 213). This "state of stability" does not follow from religion but from "science." The "majority" cannot realise it, as the socialists suppose, nor can the power of the socialists "help humanity" (p. 207); no, "free development" will lead to the ideal. Does not the profit of capital, as a matter of fact, decrease? Do not wages increase constantly? (p. 223). All the assertions regarding "wage slavery" are not true (p. 229). The slaves used to be beaten without their masters incurring any punishment; and now? Nay, "moral progress" is indubitable; look at the university settlements

in England, at the Salvation Army (p. 230), at the German "ethical societies." In the name of "esthetic stability" (chapter II, section 2) is "romanticism" rejected. And to romanticism belong all tendencies which aim at unduly widening the ego, namely, idealism, metaphysics, occultism, solipsism, egoism, and the "forcing of majority rule on a minority by the majority" and the "social-democratic idea as regards the organisation of labour by the state" (pp. 240-241).[3]

The sociological excursions of Blei, Petzoldt and Mach may be reduced to the unlimited dulness of the Philistine, who in his self-contentment retails the most vulgar rubbish under the cover of "recent empirio-critical" systematisation and terminology. A pretentious cloak of verbal legerdemain, a sham contrivance of syllogistics, a subtle scholasticism, in a word, just as in epistemology so in sociology—the same reactionary content under the same glaring labels.

Let us now consider the Russian Machians.

2. *How Bogdanov Corrects and "Develops" Marx*

In his article "The Development of Life in Nature and Society,"[4] Bogdanov quotes a certain part of the preface to the *Critique of Political Economy*, where the "greatest sociologist," expounds the fundamentals of historical materialism. Having quoted from Marx, Bogdanov declares that the "old formulation of historical monism, without ceasing to be true in the main, does not, however, fully satisfy us" (p. 37). The author wishes, therefore, to make certain corrections and to develop the theory, *taking its foundations as the starting point.* The chief conclusion of the author is as follows:

"We have shown that social forms belong to a more extensive genus of biologic adaptation. But we have not thereby defined the province of social forms; for in definition, not only the genus must be established, but the species as well. . . . In their struggle

[3] In the same spirit Mach voices his sympathy with the bureaucratic socialism of Popper and Menger who guarantee the "freedom of the individual," while in the doctrines of the social-democrats who, in his opinion do not favourably compare with the others, he sees a "slavery, which is even more universal and more depressing than it would be in a monarchical or oligarchical state." *Cf. Erkenntnis und Irrtum*, pp. 80-81.

[4] *Psychology of Society*, p. 35 *ff.*

for existence men could not have associated unless they had been endowed with *consciousness:* without consciousness there could have been no communion. Therefore *social life in all its manifestations is a consciously psychic life.* . . . Sociability is inseparable from consciousness. *The social being and social consciousness in the exact meaning of the words are identical*" (p. 51, Bogdanov's italics).

That this inference has nothing to do with Marxism had already been shown by Orthodox.[5] But Bogdanov merely responded with abuse, caviling at an error in the quotation—maintaining that instead of being quoted "in the exact sense of the word" Orthodox quoted him "in the full sense of the word." The mistake was obvious, and the author had a perfect right to correct it, but to raise a noise on account of the "mutilation," "substitution," etc.,[6] is simply to obscure the question at issue by wretched words. Whatever "exact" sense Bogdanov could have given to the words "social being" and "social consciousness," it is beyond doubt that the proposition we have quoted is not *correct.* "Social being" and "social consciousness" are not identical, just as being in general and consciousness in general are not identical. From the position that men enter into social relations as conscious beings, it does not by any means follow that "social consciousness" is identical with "social being." Entering into social relations, people are not *conscious* of the kind of social relations that are being formed, or according to what principles they are developing; this in any complicated social order, especially in the capitalist order. . . . For instance a peasant while selling grain comes into "social relations" with the world producers of grain on the world market, but he is not conscious of it, neither is he conscious of the kind of social relations that are formed on the basis of the exchange. Social consciousness *reflects* social being—this is Marx's teaching. The reflection may be a true, though approximate copy of the reflected, but to speak of their identity is absurd. Consciousness in general reflects being—this is the general position of *all* materialism. It is impossible not to see its direct and *inseparable* connection with the position of historical materialism, that is, that social consciousness *reflects* social being.

[5] *Outlines of Philosophy*, St. Petersburg, 1906, Preface and p. 183 (in Russian).

[6] *Empirio-Monism*, Book III, p. xliv.

Bogdanov's attempt to correct and develop Marxism in the "spirit of his fundamental ideas," is but an obvious distortion of these *materialistic* fundamental conceptions in the spirit of idealism. It would be ridiculous to deny it. Let us recollect Bazarov's exposition of empirio-criticism (not of empirio-monism, for this would be impossible, since between these "systems" there is such a great, great difference!); "Sense-perception is the reality existing outside of us." This is open idealism, an open avowal of the identity of consciousness and being. Let us further recollect the formulations of Schuppe, the leader of the immanentist school (who has just as much as Bazarov, *et al.*, maintained that he was not an idealist, and who, like Bogdanov, ascribed a special "exact" meaning to his words): "Being is consciousness." Compare with this the refutation of Marx's historical materialism by the follower of the immanentist school, Schubert-Soldern: "Each material process of production is always a phenomenon of consciousness in relation to its observer. . . . In the epistemological relation not the external process of production is the *prius*, but the subject or subjects; in other words, the purely material process of production does not lead us out of the invariable connection of consciousness." [7]

Bogdanov may condemn the materialists as much as he pleases for "mutilating his thoughts," but no condemnation will change the simple fact. The modification of Marx's theory and the development of Marx supposedly in the spirit of Marx by the empirio-monist, Bogdanov, does not differ in the least from the refutation of Marx by the idealist and epistemological solipsist, Schubert-Soldern. Bogdanov assures us that he is not an idealist; Schubert-Soldern assures us that he is a realist (Bazarov went so far as to believe him). In our time it is impossible for a philosopher not to declare himself a "realist" and an "enemy of idealism." It is about time you understood this, Machian gentlemen!

The followers of the immanentist school, the empirio-criticists and the empirio-monists haggle about details, about the formulations of idealism, while we reject from the very *beginning* all the fundamental doctrines of philosophy, which this philosophic trinity has in common. Let Bogdanov with the best intentions, and accepting all the *conclusions* of Marx, preach the "identity" of social being and social consciousness; we will say: Bogdanov minus

[7] *See Das menschliche Glück und die sociale Frage*, pp. 293, 295, 296.

"empirio-monism" (rather minus Machism) is a Marxian. For this theory of identity of social being and social consciousness is a *thoroughgoing absurdity, and certainly a reactionary theory.* If certain people reconcile it with Marxism, with the Marxian tendency, we may recognise that these people in themselves are better than their teachings, but we may not justify the outrageous theoretical distortion of Marxism.

Bogdanov reconciles his theory with the conclusions of Marx, thereby sacrificing elementary consistency for its sake. Each separate producer in the world economy is conscious that he introduces a certain change into the technique of production, each owner knows that he exchanges certain products for others, but these producers and these owners are not aware that in doing this they change social existence. The sum-total of these changes in all the ramifications of the world economy not even seventy Marxes could embrace. What could be obtained at most is that the regulation of these changes would be discovered, that the *objective* logic of these changes and their historic development would be shown in its general outlines. It is objective, not in the sense that the society of conscious beings, men, could exist and develop independently of the existence of conscious beings (Bogdanov stresses these trifles in his "theory"), but in the sense that social being is *independent of the social consciousness of men.* That you live and keep house, beget children, manufacture and exchange products, all these comprise the objectively necessary chain of events in social development, independently of our *social consciousness,* which never fully embraces these facts. The highest task of humanity is to comprehend the objective logic of the economic evolution (the evolution of social existence), to comprehend the most general and fundamental features with the purposes of adapting its social consciousness and the consciousness of the advanced classes of all capitalist countries to *it* in clear, exact and critical fashion.

Bogdanov acknowledges all this. What does it mean? It means that his theory of the "identity of social existence and social consciousness" is *actually* thrown overboard by him, and remains an empty trinket, as empty, dead and useless as the "theory of universal substitution" or the teaching about "elements," "introjection" and the rest of the Machian confusion. But the "dead seizes the living"; the dead scholastic trinket, *against one's will and independently of Bogdanov's consciousness,* converts his philosophy

into a *serviceable tool* of the Schubert-Solderns and other reactionaries who in a thousand ways and from hundreds of professorial chairs disseminate *this same* lifeless doctrine as if it were alive, with a view to suppressing the living. Bogdanov is a sworn enemy of every sort of reaction in general and of bourgeois reaction in particular, yet his "substitution" and his theory of "identity of social existence and social consciousness" *serve* this reaction. This is a sad fact, but a fact it is.

Materialism generally recognises the objectively real being (matter) as existing independently of mind, sensation, experience, etc. Historical materialism recognises social being as existing independently of the social consciousness of humanity. Consciousness here and there is only an image of being, at best an approximately true (adequate, ideally exact) image of it. You cannot eliminate even one basic assumption, one substantial part of this philosophy of Marxism (it is as if it were a solid block of steel) without abandoning objective truth, without falling into the arms of the bourgeois-reactionary falsehood.

Here are other examples of how the dead philosophy of idealism seizes the living Marxian, Bogdanov.

In the article "What Is Idealism" (1901, p. 11 *ff.*), he says: "We come to this conclusion: Where people agree in their judgments of progress, and where they disagree, the basic criterion of the idea of progress remains one and the same; namely, an *increasing fulness and harmony of conscious life.* Such is the objective content of the concept of progress. . . . If we do now compare the psychological character of the idea of progress with the previously explained biological idea ["biological progress is called an increase in the sum total of life," p. 14], then we will easily be convinced that the former fully coincides with the latter and can be deduced from it. . . . Because social life is reduced to the psychical life of the members of society, here, too, the content of the idea of progress remains one and the same—the increasing fulness and harmony of life; but we must add only the *social* life of men. And, of course, the idea of social progress never had nor can have any other content" (p. 16).

"We found . . . that idealism expresses the victory in the human soul of moods that are more social over those that are less social, that a progressive ideal is a reflection of socially progressive tendencies in the idealist psychology" (p. 32).

It goes without saying that there is not a grain of Marxism in this whole play at biology and sociology. Both in Spencer and Mikhailovsky we can find as many definitions as we please which are no worse than these, and which define nothing but the "good intention" of the author and show a *complete lack of understanding* of what idealism and materialism are.

In the article "Social Selection" [8] the author begins by refuting the "eclectic socio-biological attempts of Lange, Ferri, Woltmann and others," and on page 15 we find the following conclusion of the "inquiry": "We can thus formulate the fundamental connection between energetics and social selection:

"*Every act of social selection is marked by an increase or decrease in the energy of that social complex to which it is related. In the first case we have a positive, in the second—a negative selection.*" (Author's italics).

And such an impossible word jugglery is offered as Marxism! Can one imagine anything more sterile, more dead or scholastic than such a jumble of biological and energetical terms which says nothing at all of the province of social science? There is not a shadow of concrete economic inquiry, not a hint of Marx's *method*, the method of dialectics linked with the doctrines of materialism, but a simple network of definitions, and attempts to force the ready-made conclusions of Marxism into them. "The rapid growth of the productive forces of the capitalist society undoubtedly marks an increase in the energy of the social whole." The second half of the phrase is, undoubtedly, a mere repetition of the first half, expressed in meaningless terms which seem to make the statement "more profound" but which actually do not *in the least* differ from the eclectic biologico-sociological attempts of Lange, *et al.!* "But the disharmonious character of this process leads to its being completed by a 'crisis' by the great loss of productive forces, by an acute decrease of energy; the positive selection is changed for the negative" (p. 18).

Does this not recall Lange? A biologico-energetic label is tacked on to ready-made conclusions concerning crises, without offering any concrete material whatsoever, without elucidating the nature of crises. All this, to be sure, is done with the very best intentions, because the author wishes to confirm and to widen the conclusions of Marx, but in reality he is diluting them by an intolerably tedious

[8] *Empirio-Monism*, Bk. III, p. 1.

and deadening scholasticism. The only "Marxism" in Bogdanov lies in his *repetition* of previously established conclusions while all his "new" ways of substantiating Marxism, his "social energetics" (p. 34) and "social selection" are mere jumbles of words, a real caricature of Marxism.

Bogdanov is not engaged in a Marxian inquiry at all, but in bedizening the results previously attained by this inquiry, in the ornamental phraseology of biology and energetics. The entire attempt, from beginning to end, is useless, because there is no available application of the ideas of "selection," "assimilation and dissimilation" of energy, energetic balance, and so forth, in the province of the social sciences. They are simply *shallow phrases.* In reality no *inquiry* concerning social phenomena, no elucidation of the *method* of social sciences *can* be given with the aid of these ideas. Nothing is easier than to tack on the labels of "energetics" or "biologico-sociology" to the phenomena, say, of crises, revolutions, class struggles, etc., but there is nothing more sterile, more scholastic and deadly than an occupation of this sort. It is not important that Bogdanov wishes to reconcile all or "almost" all of his results and conclusions with Marx (we have seen what "correction" he made in the question of the relation of social existence to social consciousness). But it is important to realise that his method of reconciliation—"social energetics"—is thoroughly false and does not differ in principle from the method of Lange.

"Mr. Lange," Marx wrote to Kugelmann on June 27, 1870, "praises me exceedingly . . . in order to pose as a great man. The thing is that Mr. Lange has made a great discovery. All history can be subsumed under a single great natural law. This natural law consists of the phrase 'struggle for existence' (the expression of Darwin in this usage becomes a shallow phrase) and the content of this phrase embraces Malthus' law of population, or rather migration. Hence, instead of analysing this struggle for life, as it historically manifested itself in various social forms, there remains nothing to do but to transform each concrete struggle into the phrase 'struggle for existence,' and this phrase into the Malthusian phantasy as regards population. It must be granted that this is a very convincing method . . . for a pampered, bombastic ignorance and laziness of thought which poses at being scientific." (*Briefe an Kugelmann,* 1924, pp. 75-76.)

The basis of the Marxian criticism of Lange is not that Lange

tries to impose forcibly a special interpretation of Malthus' doctrine in the province of sociology, but that the application of biologic ideas in *general* to the domain of social sciences can only result in a meaningless *phrase*. Whether such a transference of categories is undertaken with good intentions, or in order to emphasise false sociological conclusions, does not make an empty phraseology any less empty. And the "social energetics" of Bogdanov, his modification of Marxism through the doctrine of social selection, exemplifies that sort of phraseology.

Just as in epistemology Mach and Avenarius did not develop a new idealism, but only overlaid the *old* idealist fallacies with pretentious, terminologic nonsense ("elements," "essential co-ordination." "introjection," etc.), so in sociology, even though it be in sincere sympathy with the conclusions of Marxism, empirio-criticism leads to the perversion of historical materialism through a pretentious, shallow and verbose energetic and biologic phrase-mongery.

The historical peculiarity of the modern Russian Machism (or rather the Machian pestilence which characterises a certain section of social-democracy) can be traced to the following circumstance. Feuerbach had been a "materialist at heart, and an idealist at the surface"; the same to a certain extent is true of Büchner, Vogt, Moleschott and Dühring, with the essential difference that all these philosophers were pygmies and miserable scribblers in comparison with Feuerbach.

Marx and Engels had grown away from Feuerbach, and plucking up courage in their struggle with the scribblers, naturally paid more attention to developing the philosophy of materialism from the top down, that is, they took their point of departure not from the basis of the materialist epistemology but from the materialist conception of history. Marx and Engels in their work emphasised *dialectic* materialism rather than dialectic *materialism*. They insisted on historical *materialism* rather than *historical* materialism. Our Machians, who desire to be Marxians, approached Marxism in an entirely different spirit from that regnant in the period of historicism; they approached it at a time when bourgeois philosophy had specialised particularly in epistemology and, adopting certain component elements of dialectics in a one-sided and mutilated form (relativism, for instance), had paid more attention to the defence and restoration of idealism from the bottom up than from the top down. At least positivism, in general, and Machism, in par-

ticular, have been continually engaged in a subtle falsification of epistemology; have concealed their idealism under a counterfeit materialistic terminology, and have paid comparatively little attention to the philosophy of history. Our Machians did not understand Marxism, because they happened to approach it from the *other side*, so to speak, and they adopted, or rather learned by heart, the economical and historical theory of Marx, without having made its fundamentals clear to themselves, that is, without having grasped philosophical materialism. Bogdanov and the others should therefore be called Russian Büchners and Dührings turned inside out. They wanted to be materialists from above, but they were unable to rid themselves of muddled idealism from below! "Above," in the case of Bogdanov, means his historical materialism, albeit vulgarised and greatly affected by his idealism; "below" means his idealism, disguised by counterfeit Marxian terms. "Socially organised experience," "collective labouring process"—these are Marxian terms, but they are *terms* only, which conceal an idealist philosophy that declares things to be complexes of "elements," or sensations; which regards the outer world as "experience," or as the "empirio-symbol" of humanity; and maintains that physical nature is "derived" from the "psychical," etc.

A subtle and continual falsification of Marxism, a crafty and constant dissemination of anti-materialist doctrines disguised in a Marxian garb—this is how modern revisionism must be characterised—in the field of political economy, in questions of tactics and in philosophy as a whole, in both its epistemological and sociological aspects.

3. *On Suvorov's "Foundations of Social Philosophy"*

The Outlines, etc., which close with the above-mentioned article by Comrade Suvorov, represents a bouquet with an unusually strong effect because of the collective character of the book. When, together with Bazarov, who says that, according to Engels, "sense-perception is the reality existing outside of us," we have Berman who declares the dialectics of Marx and Engels to be mysticism, and Lunacharsky who goes so far as to speak of religion, and Yushkevich who introduces "Logos into the irrational stream of experience," and Bogdanov who calls the philosophy of Marxism, idealism, and Helfond who purges Dietzgen's philosophy—of its

materialism, and, lastly, Suvorov with the article "Foundations of Social Philosophy," then one begins to feel at once the "spirit" of the new alignment. Quantity has passed into quality. The "seekers" who have hitherto been searching individually and in separate articles and books, have come out with an actual programme. Individual differences of opinion are overlooked by the very nature of the collective attack *against* the philosophy of Marxism, and the reactionary traits of Machism as a movement become manifest.

Suvorov's article is still more interesting under these circumstances, for the author is neither an empirio-monist nor an empirio-criticist, but merely a "realist." He has been, therefore, drawn into their company not by the philosophic peculiarities of Bazarov, Yushkevich and Bogdanov, but by the common opposition *against* dialectical materialism. A comparison between the sociological doctrines of this "realist" and the doctrines of the empirio-monist will help us to discover their *common* tendency.

Suvorov writes: "In the gradation of laws which regulate the world process, the individual and complicated laws are reduced to common and simple laws, and all of them are subject to the universal law of evolution—the *law of the economy of forces.* The substance of this law is that *the less expenditure there is in each system of forces, the more adapted it is for conservation and development; the greater its accumulation becomes and the more effectively is that accumulation served by expenditure.* The forms of mobile stability, which have long since evoked the idea of objective expediency (the solar system, the cycle of earthly phenomena, the process of life), are produced and developed because of the saving and accumulation of energy which belong to them in virtue of their inner economy. The law of economy of forces appears as a unifying and regulating principle of every development—of the inorganic, biological and social" (p. 293, author's italics).

Our "positivists" and "realists" "cook" their "universal laws" quite easily! It is only to be regretted that these laws are not a whit better than those which Eugene Dühring "cooked up" quite as easily and quickly. Suvorov's "universal law" is just as shallow a phrase as Dühring's universal laws. Try to apply this law to the first of the three domains which the author himself points out, to inorganic evolution. You shall see that no "economy of forces,"

without the law of conservation and transformation of energy, can here be applied and that you will not succeed in applying them "universally." And the author had already singled out the law of "conservation of energy" (p. 292) as a separate law.[9] What remains, then, in addition to this law in the domain of inorganic development? Where are the additional data, the complications, the new discoveries, or the new facts which give the author the right to change ("to perfect") the law of conservation and transformation of energy into a law of "economy of forces"? There are no such facts or discoveries and Suvorov has made no attempt to speak of them. In order to appear very important, he permits his pen to glide over the paper and thereby creates a new "universal law" of "real-monistic philosophy" (p. 292). Let the world know who we are! We are no worse than Dühring!

Let us take the second field in which the development is supposed to have taken place—the biological. Is the law of economy, or the "law" of distribution of forces, through the development of organisms, the struggle for existence and the mechanism of selection, universally evidenced here? No trouble at all! The "meaning" of the universal law can be interpreted by "real-monistic philosophy" one way in one field, another way in another field. Here, for example, it is interpreted as the development of *higher* organisms out of lower. What does it matter if the universal law becomes a shallow phrase because of such an interpretation, so long as the principle of "monism" is respected? As for the third domain (the social), the "universal law" can be interpreted in its third meaning as the development of productive forces. That is why

[9] It is characteristic that Suvorov considers the discovery of the law of conservation and transformation of energy as "establishing the basic principles of energetics" (p. 292). Was our "realist," who desires to be a Marxian, unaware of the fact that the vulgar materialists, Büchner and his followers, as well as the dialectical materialist, Engels, had already considered this law as establishing the basic principles of *materialism?* Did our "realist" reflect on the meaning of the difference? Indeed, he did not, he merely adopted the fashion, and repeated Ostwald. That is all. And that is just the trouble with those "realists" who yield to fashion, while Engels, for instance, *adopted a new term* for energy and began to apply it in 1885 (Introduction to the 2nd ed. of *Anti-Dühring*) and in 1888 (*Feuerbach*), but applied it together with the concepts of "force" and "motion"; in the interim Engels was enabled to enrich his *materialism,* having adopted the new terminology. The "realists" and other muddleheads, having seized upon the new term, have overlooked the difference between materialism and energetics.

it is a "universal law"; it can be made to express anything we want.

"Although social science is still young, it already possesses both a solid foundation and some definite generalisations; in the nineteenth century it attained its theoretical height, and this constitutes the chief merit of Marx. He raised social science to the level of social theory. . . ." Engels said that Marx transformed socialism from a utopian doctrine into a scientific doctrine, but this is not sufficient for Suvorov. It is more imposing, he believes, if we introduce a distinction between *science* (was there a social science before Marx?) and theory. It matters not if the distinction is absurd!

". . . Having established the law of social dynamics, due to which the evolution of productive forces appears as the determining principle of all economic and social development. But the development of the productive forces corresponds to the growth of the productivity of labour, to the relative reduction in expenditure and to an increase in the accumulation of energy [see how productive "real-monistic philosophy" is itself, a new foundation for Marxism has been developed by means of energetics!] . . . this is the economic principle. Thus into the foundations of social theory Marx put the principle of the economy of forces. . . ."

This "thus" is truly without precedent! *Because* there can be found in Marx the phrase political economy, let us therefore chew on the *word* "economy," and name the products of the mastication "real-monistic philosophy"!

No, Marx did not put any principle of economy of forces into the basis of his theory. These are trifles which have been invented by people for whom the laurels of Eugene Dühring are still green. To the notion of growth of productive forces Marx gave a perfectly exact definition, having studied the concrete process of this growth. And Suvorov invented a new word in order to signify the notion which had been analysed by Marx. It turns out that the invention is very unsatisfactory, for it only confuses matters. For what is meant by the "economy of forces"? how can it be measured? how can this conception be applied? what exact and definite facts will fit into it?—these Suvorov did not explain, nor can they be explained, for it is the rankest confusion. Let us proceed:

" . . . This law of social economy appears not only as the

principle of the inner unity of social science [reader, do you understand anything here?] but the connecting link between social theory and the universal theory of being" (p. 294).

Well, well, the "universal theory of being" is again discovered by Suvorov after it had been discovered in various forms by the numerous representatives of scholastic philosophy. We congratulate the Russian Machians for their new "universal theory of being"! Let us hope that their future collective work will be dedicated entirely to the exposition and development of this great discovery!

We can judge of the nature of the exposition of Marx's theory which our representative of realistic or real-monistic philosophy gives from such an example as this: "In general the productive forces of people form a genetic gradation [!] and consist of labour energy, of harnessed elemental forces of nature, and of a nature which has been modified by culture and the tools of labour, or productive technique. . . . In relation to the process of labour these forces fulfil a purely economic function; they save labour energy and raise the productivity of its expenditure" (p. 298). The productive forces fulfil economic functions in relation to the process of labour! This is as if one were to say that the vital forces fulfil a vital function in relation to the process of life. This is not an exposition of Marx but a clogging up of the pure stream of his thought with verbal litter.

It is impossible to tell all about the litter in Suvorov's article. "The socialisation of classes is expressed in the growth of its collective power over men and their property [p. 313]. . . . The class struggle is directed toward the establishment of forms of stability between social forces [p. 322]. . . ." Social strife, hostility and struggle are essentially negative, anti-social phenomena. "Social progress, in its basic content, is a growth in sociability, in the social relations between men [p. 328]. . . ." We could fill volumes with collections of such platitudes, and the representatives of bourgeois sociology actually do fill their volumes with these commonplaces; but to hand this out as the philosophy of Marxism—that is entirely too much! If the article of Suvorov were an attempt to popularise Marxism, it would not be judged very severely; everyone would recognise that the author's intentions were good but his attempt was unsuccessful, and that would be the end of it. But when a group of Machians present it to us under the title of

Foundations of Social Philosophy, when we see the same sort of an "improvement" upon Marxism in the philosophic books of Bogdanov, we must inevitably arrive at the conclusion that there is an inseparable connection between reactionary epistemology and a reactionary position in sociology.

4. *"Parties" in Philosophy and Blockheads in Philosophy*

It remains now to examine the question concerning the relation of Machism to religion. But this broadens into the larger question, as to whether there are in general "parties" in philosophy, and what is the meaning of impartiality in philosophy?

During the whole of the preceding exposition, in each of the problems touched upon in epistemology, in every philosophical question set by recent physics, we have traced the struggle between *materialism* and *idealism*. Behind the mass of new terminologic contrivances, behind the litter of quasi-erudite scholasticism, we have found, without exception, two principal alignments, two fundamental tendencies in the solution of philosophic problems—that is, whether to take nature, matter, the physical, the outer world as the *prius* or whether to start with consciousness, spirit, sensation (experience in conformity with the *popular* terminology of our time), the psychical, etc. This is the fundamental problem which *still* divides philosophers into *two great camps*. The source of thousands upon thousands of errors and colossal confusion in this domain is precisely the fact that due to the arbitrary nature of terms and definitions, due to scholastic trickery and verbal distinctions, these two fundamental tendencies are *overlooked*. (Bogdanov, for instance, refuses openly to admit his idealism, because instead of the "metaphysical" notions of "nature" and "spirit," he has taken the "empirical," the physical and psychical. A mere change of terms!)

The genius of Marx and Engels lay in the fact, that during a long period, *for nearly half a century*, they developed materialism by advocating one fundamental tendency in philosophy. They did not lose time in repeating solutions of epistemologic problems already solved, but consistently developed them, and showed *how* to carry materialism into the domain of the social sciences, mercilessly brushing aside, as litter, nonsense, and pretentious word jugglery, the countless attempts to "discover" a "new" alignment

in philosophy, to invent a "new" tendency, etc. The verbal character of such attempts, the scholastic play upon new philosophic "isms," the obfuscation of the essence of the question by artificial distinctions, the inability to comprehend and clearly present the struggle of the two principal epistemologic tendencies—these were the things which Marx and Engels fought throughout their entire lifetime of activity.

We said, "for nearly half a century." Indeed, as far back as 1843 when Marx had just, so to speak, become Marx, *i. e.*, the founder of scientific socialism, the founder of *modern materialism* (immeasurably richer in content and incomparably better grounded than all previous forms of materialism), he had already drawn the basic lines of division in philosophy with astounding clarity. Karl Grün quotes a letter of October 30, 1843, to Feuerbach, in which Marx invited Feuerbach to write an article in the *Deutsch-Französische Jahrbücher* against Schelling. This Schelling, writes Marx, is a shallow braggart with his pretence at embracing and transcending all previous philosophic tendencies.

"To the French romanticists and mystics Schelling says that the self represents the connection of philosophy and theology; to the French materialists he says that the self is the connection of body and ideas; to the French sceptics, that the self is the destroyer of dogmatism." [10] That the "sceptics," whether they are termed Humeans or Kantians (or Machians in the twentieth century), object to "dogmatism" and materialism and idealism, Marx realised even at that time, and, without letting himself be drawn into one of the thousands of miserable and petty systems, he was able, thanks to Feuerbach, to take a materialist stand against idealism. Thirty years later, in the afterword to the second edition of the first volume of *Capital*, Marx clearly and completely contrasts his *materialism* with Hegelian *idealism*, the most consistent and advanced representative of all idealisms. He contemptuously rejects Comteian "positivism" and declares the modern philosophers to be miserable *epigoni* who imagine that they have destroyed Hegel, when in reality they have reverted to the repetition of the pre-Hegelian errors of Kant and Hume. Also in the letter to Kugelmann of June 27, 1870, Marx contemptuously treats Büchner, Lange, Dühring,

[10] Karl Grün: *Ludwig Feuerbach in seinem Briefwechsel und Nachlass, sowie in seiner philosophischen Characterentwicklung*, Leipzig, 1874, Vol. I, p. 361.

Fechner, etc., for the reason that, being unable to understand Hegelian dialectics, they despised it.[11]

And finally, take the separate remarks of Marx in *Capital* and other works, and you shall see the same unchanged basic motive—an insistence upon *materialism* and his contemptuous derision of every obscurity, every confusion and every deviation towards *idealism*. *All* the philosophic remarks of Marx revolve around these two principal distinctions. In this "narrowness" and "one-sidedness" from the viewpoint of professorial philosophy, lies their defect. Indeed, the greatest service of Marx who continually advanced along a very definite philosophic road, consists in this unwillingness to take account of the illegitimate products of an attempted reconciliation between materialism and idealism.

Fully in the spirit of Marx and in close collaboration with him, Engels in all his philosophic works briefly and clearly contrasts the materialist and idealist alignments in *all* questions, without taking seriously, either in 1878 or in 1888 or in 1891, the innumerable endeavours to "transcend" the "one-sidedness" of materialism and idealism, or proclaiming as a *new* tendency whatever "positivism," "realism" or other professorial charlatanism might have been current. The struggle with Dühring was led by Engels *wholly* under the slogan of a consistent pursuit of materialism. He accused the materialist Dühring of a verbal obfuscation of the real issue, for his phraseology, for his mode of argument which smacks of compromise with and desertion to idealism. Either a materialism consistent to the end, or the falsehood and confusion of idealism—that is the alternative presented by *every paragraph* in *Anti-Dühring;* only people whose minds have been corrupted by the reactionary official philosophers can fail to notice it. And until 1894, when the last preface had been written for the last time to the revised and completed edition of *Anti-Dühring*, Engels, who had been constantly following up recent philosophy and the recent developments in science, continued with his old determination to insist on his lucid and firm position, clearing away the litter of latter-day puppet systems.

That Engels followed the developments of recent philosophy,

[11] Of the positivist Beesly, Marx speaks as follows in the letter of December 13, 1870: "As a follower of Comte, he cannot help having crotchets." Compare with this Engel's estimate of the positivists of Huxley's type in 1891.

can be seen from his *Feuerbach.* In the preface of 1888, there is mentioned even the occurrence of the renaissance of classic German philosophy in England and Scandinavia. As far as the dominating tendencies of Neo-Kantianism and Humism, in Engels' own writings, there is nothing but utter contempt for them (both in the preface and in the text of the book). It is quite obvious that Engels, in noticing the repetition by the *fashionable* German and English philosophers of the old pre-Hegelian errors of Kantianism and Humism, expected a certain amount of good (in England and Scandinavia) even from the *change* to *Hegel.* He expected that the great idealist and dialectician would help philosophers to discover petty idealist and metaphysical confusions.

Without going into an examination of the great number of nuances of Neo-Kantianism in Germany and of Humism in England, Engels at the very *start* refutes their fundamental digression from materialism. He declares the *entire tendency* of these schools as "scientifically a step backward." And how does he characterise the indubitably "positivistic" (from the viewpoint of the current terminology) and indubitably "realistic" tendencies of those Neo-Kantians and Humeans, amongst whom, for instance, it was impossible not to recognise Huxley? That "positivism" and that "realism," which has been attracting the attention of the multitude of muddleheads, Engels declared, to put it mildly, to be *at best a Philistine method to smuggle in the same materialism* which they continued to denounce and renounce publicly! It suffices to meditate a little upon *such* an attitude toward Huxley, the outstanding naturalist, and the incomparably more realistic realist and positivistic positivist than Mach, Avenarius, *et al.*, in order to conceive with what contempt Engels would have greeted the modern fad of "recent positivism" or "recent realism," etc., by a group of alleged Marxians.

From the beginning to the end Marx and Engels were "partial" in philosophy; in each and every "new" tendency they were able to discover deviations from materialism and an unwarranted indulgence in idealism and fideism. Therefore, Huxley was estimated by them *exclusively* from the point of view of materialistic consistency. Therefore they took Feuerbach to task for his failure to pursue materialism to the end, for his renunciations of materialism because of the errors of individual materialists, for his struggle against religion in order to renew or construct a new religion, for

his failure to rid himself of idealist phraseology while proclaiming himself a materialist.

And whatever his individual mistakes may have been in his exposition of dialectical materialism, Dietzgen esteemed and adopted this greatest and most precious tradition from his teachers. Dietzgen committed many a sin in his clumsy deviations from materialism, but he never attempted to mark himself off from the principle, never attempted to raise a "new" standard. In the decisive moment he always declared firmly and categorically: "I am a materialist, our philosophy is materialistic." "Of all parties," justly said our Dietzgen, "the party of the 'middle-roaders' is most wretched." "Just as in politics," says Dietzgen, "we see the nation dividing itself into two camps . . . so in science it divides into two general divisions—metaphysicians here and physicists or materialists there.[12] . . . The intermediating movements and conciliating quacks with their different appellations—spiritualists, sensualists, realists, etc., etc.—are carried away by the current. We are steering full steam ahead to a definite and clear outline of things. Pure idealists[13] are those who sound the retreat, and dialectic materialists must be the appellation of all those who strive for the liberation of the human mind from all metaphysical magic. In comparing the two parties to solid and liquid matter we find pulpiness as the intermediary stage."[14]

This is true. The "realists," etc., including the "positivists," the Machians, etc., are all wretchedly pulpy, a contemptible party of *middle-roaders* in philosophy, in every question confusing the materialist and idealist point of view. The attempt to escape these two basic tendencies in philosophy is nothing but a "conciliatory quackery."

That the "scientific clericalism" of idealistic philosophy is merely the threshold to a more outspoken clericalism; of this Dietzgen had no doubt at all. "It is necessary to bear this in mind, inasmuch as a scientific priesthood has arisen which is aiding and abetting religious priestcraft [p. 128]. To destroy palpable super-

[12] This is a sample of his inexactness of expression: instead of "idealists" he said "metaphysicians." Elsewhere Dietzgen himself contrasts the metaphysicians with the dialecticians.

[13] Note that Dietzgen corrected himself and explained more exactly to what party the enemies of materialism belonged.

[14] *Philosophical Essays*, pp. 214-216; *cf.* article "Social-democratic Philosophy," written in 1876.

stition would be an easy matter if dualist confusion were not on the lookout for the gaps of science in order to lay there its eggs. Such gaps are to be found especially in the field of epistemology."

"The graduated flunkeys use their sham idealism to keep the people in ignorance [p. 130, that is how Dietzgen looks upon professors of philosophy]. As Lord God found his antipodes in the devil so has the pious professor found his antagonist in the materialist [p. 130]. . . . The epistemology of materialism is the universal weapon against religious belief [p. 132]. And not only is socialism opposed by the formal, the common religion of priestcraft, but also by the most purified and sublime professional religion of hazy idealists" (p. 135).

Rather than the "half-hearted" course of the free-thinking professors, Dietzgen was ready to prefer "religious integrity" (p. 137), for there at least is a system, there at least people are sincere, for they do not separate theory from practice. For the professors, "philosophy is not a science, but a safeguard against social-democracy" (p. 186). "All those who call themselves philosophers, professors, university lecturers, have, despite their pretensions to free-thought, not yet freed themselves from superstition and mysticism. . . . They must be regarded from the social-democratic point of view, as a compact mass of uneducated reactionaries [p 188]. . . . Now, in order to be able to follow the right way without being misled by any religious or philosophical maze, it is necessary to study the most mistaken of all mistaken ways, namely, Philosophy" (p. 183).

Let us now look, from the point of view of "parties" in philosophy, at Mach, Avenarius and their school. Oh, these gentlemen *brag* about their *impartiality*, and if they have an antipode, then it is one and only one—the *materialist*. Through *all* the writings of *all* the Machians runs the stupid pretence to "rise above" materialism and idealism, to transcend this "obsolete" distinction, while *in fact* all these gentlemen *continuously* deviate toward idealism, and lead an incessant struggle against materialism. The cunning epistemological distinctions of an Avenarius are no more than professorial fictions, no more than an attempt to form a small philosophical sect of "his own"; *in fact* in the general environment of the struggle of ideas and tendencies in modern society, the *objective* rôle of these epistemological contrivances is one and the same—to clear the road to idealism and fideism, to be of service to them. It

is indeed not a mere accident that the English spiritualists, such as Ward, and the French neo-criticists, who praise Mach for his attack on materialism, and the German followers of the immanentist school, all acclaim the petty school of empirio-criticists. Dietzgen's expression "the graduated flunkeys of theism" best befits Mach, Avenarius and their school.[15]

The misfortune of the Russian Machians, who wished to "reconcile" Machism with Marxism, arose from the fact that having put their confidence in the reactionary professors of philosophy, they consequently sank lower and lower. The methods which were employed in attempting to develop and modify Marx were not very ingenious. Now it is Ostwald who is read through, who is taken at his word, his doctrines repeated, and called Marxism. Now it is Mach who is read through, who is taken at his word, his doctrines repeated, and, in its turn called Marxism; and the same is true for Poincaré. *Not a single* professor among those who are able to make the most valuable contributions to the special domains of chemistry, history, physics, *can be trusted even so far as a single word* when it comes to philosophy. What is the reason for this? It is the same as that which explains why *not one* professor of political economy, who is able to make the most valuable contributions to the domain of factual, special investigations, can be trusted even so far as a *single word*, when it comes to the general theory of political economy. For political economy in modern society is just as *partial* a science as is *epistemology*. Taken as a whole, the professors of economics are nothing but scientific salesmen of the capitalist class,

[15] Here is an example of how the widespread currents of reactionary bourgeois philosophy makes use of Machism. The "latest fashion" in recent American philosophy is "pragmatism" (from the Greek word "pragma"—action; that is a philosophy of action.) The philosophical journals speak more of pragmatism than of anything else. Pragmatism ridicules the metaphysics of idealism and materialism, extols experience and only experience, and recognises practice as the only criterion of truth. It points to the positivistic movement in general, and *leans especially* upon Ostwald, Mach, Pearson, Poincaré, Duhem in their belief that science is not an "absolute copy of reality" and . . . in a convenient manner deduces a god for practical purposes, without any metaphysics, without leaving the grounds of experience (*cf.* William James: *Pragmatism. A new name for some old ways of thinking*, New York, 1907, pp. 57 and 106 specially). The difference between Machism and pragmatism is as insignificant and subsidiary from the viewpoint of materialism as is the distinction between empirio-criticism and empirio-monism. Compare Bogdanov's definition of truth with the pragmatist's: "Truth for a pragmatist becomes a class-name for all sorts of definite working values in experience." (*ibid.*, p. 68).

and the professors of philosophy are scientific salesmen of theology.

The task of the Marxians here and there is to be in a position to grasp and elaborate those conquests which are made by these "salesmen" (for instance, you will not be able to make even a single step in your studies of new economic phenomena, without having recourse to the works of these salesmen), and then to eliminate their reactionary tendency, to pursue the Marxian tendency and to combat the *entire tendency* of forces and classes hostile to us. And it is because of the absence of this critical activity that our Machians have been impotent, *slavishly* following the footsteps of the reactionary official philosophers. "Perhaps we stray, but we are seekers," wrote Lunacharsky in the name of the authors of the *Outlines*, etc. The trouble is that it is *not you* who are searching but it is you who *are being searched*. It is not you who approach with your Marxian (for you desire to be Marxists) viewpoint to each change in the bourgeois-philosophical fashion, but it is this fashion which approaches you; it imposes upon you new adulterations with an idealistic tinge, to-day à la Ostwald, to-morrow à la Mach, the day after à la Poincaré. These foolish "theoretical" contrivances (with "energetics," "elements," "introjections," etc.) in which you naïvely believe, remain within the boundaries of a narrow little school. As for the ideological and the *social tendency* of these contrivances, however, they are immediately seized upon by the Wards, by the neo-criticists, by the immanentists, by the Lopatins and the pragmatists, for their own purposes. The fad of empirio-criticism and "idealistic physics" is passing as rapidly as the fad of Neo-Kantianism and "physiological" idealism; and fideism takes its toll from each fad, manipulating these contrivances in the interests of idealism in a thousand ways.

The relation of religion and natural science illustrates very well the *actual* class utilisation of empirio-criticism on the part of the bourgeoisie.

Take the first question. Do you suppose that it is a mere accident, if, in the collective work *against* the philosophy of Marxism, Lunacharsky went so far as to speak of the "deification of the highest human potentialities" and "religious atheism", etc.? [16] If it is thought

[16] *Outlines*, etc., pp. 157, 159. In the *Zagranichnaya Gazetta* the same author speaks of "scientific socialism in its religious significance" (No. 3, p. 5) and in *Obrazovaniye*, 1908, No. 1, p. 164, he explicitly writes: "For a long time a new religion has been maturing within me."

to be accidental it is only because the Russian Machians did not correctly inform the public of the *whole* Machian movement in Europe and of the relation of this movement to religion. Not only is there lacking in this respect anything resembling the attitude of Marx, Engels, Dietzgen and even of Feuerbach, but the *reverse* is the case. Beginning with Petzoldt's declaration that "empirio-criticism contradicts neither theism nor atheism," [17] we have Mach's declaration that "religious opinion is a private affair"; the explicit fideism or the explicit *reactionary* views of Cornelius, who praises Mach and whom Mach praises in turn, and finally Carus and all the immanentists. The neutrality of a philosopher in this question *is* already a mark of servility to fideism, and Mach and Avenarius cannot and do not rise above neutrality because of the starting points of their epistemology.

If you deny that objective reality is given to us through sensation, you have already surrendered your weapons to fideism, for you have embraced agnosticism or subjectivism; it is exactly this that fideism desires. If the perceived world is the only objective reality, then the door is closed on any other "reality" or quasi-reality (remember how Bazarov believed in the "realism" of the immanentists, who declared God to be a "real concept"). If the world is matter in motion it can and must be infinitely studied in its infinitely complicated and detailed manifestations and ramifications of *this* motion, of the motion of *this* matter; but beyond it, beyond the "physical," beyond the external world, with which everyone is familiar, there can be nothing. Hostility toward materialism is the order of the day in civilised and democratic Europe. All this has been continued until the present. All this has been *concealed* from the public by the Russian Machians who have not even *once* attempted to compare the attacks on materialism by Mach, Avenarius, Petzoldt and the others, with the declarations in favour of materialism by Feuerbach, Marx, Engels and Dietzgen.

But this "concealment" of the illicit relation to fideism borne by Mach and Avenarius will not help matters. The facts speak for themselves. No efforts in the world will break these reactionary professors away from the pillory down to which the kisses of Ward, the neo-criticists, Schuppe, Schubert-Soldern, Leclair, the pragmatists and others have nailed them. The influence of these persons

[17] *Einführung*, etc., p. 351.

as philosophers and professors, the popularity of their ideas in the "cultured," that is bourgeois, public, the special literature, created by them is ten times wider and richer than the special little school of Mach and Avenarius. The little school serves those who need it, and it is exploited in full measure.

The shameful things to which Lunacharsky has succumbed are not accidental but are the natural outcome of empirio-criticism, both Russian and German. They cannot be defended by the "good intentions" of the author, by a "special meaning" of his words; for if they had an explicit and ordinary, that is, a directly fideistic sense, we should not even talk to the author, for there cannot be a single Marxist who would not regard such a declaration as revealing an affinity between Anatole Lunacharsky and Peter Struve. If this meaning does not yet exist (and it does not *yet* exist), it is exclusively because we see the possibility of that "special" meaning and *fight while there is still ground* for a comradely fight. What is disgraceful in Lunacharsky's declarations is that he *could* connect them with his "good" intentions. The evil of his "theory" is that it permits *such* means and *such* conclusions in the realisation of good intentions. The trouble is that "good" intentions remain, under the best of circumstances, only the subjective affair of Tom, Dick and Harry, while the *social significance* of similar statements is beyond dispute, and no explanation and special reservation can help to weaken them.

One must be blind not to see the ideological affinity between the "deification of higher human potentialities" of Lunacharsky, and Bogdanov's "universal substitution" of the psychical for the physical. They are one and the same doctrine, expressed in one case from the point of view of æsthetics, and in the other, from the point of view of epistemology. The doctrine of "substitution" which approaches the other views by implication, already *deifies* the "higher potentialities," by separating the "psychical" from man and substituting for the *whole of physical nature* the immensely enlarged, abstract, deadly-divine "psychical in general." And what of the "Logos" of Yushkevich, which is introduced from above into the "irrational stream of experience?"

Enmesh a single claw, and the bird is lost. Our Machians have become enmeshed in idealism, in a diluted and subtle fideism. They became entangled from the moment they took "sensation" not as an image of the external world but as a special "element." A

sensation in general, which belongs to no one, psychology in general, spirit in general, volition in general—to relapse into pitfalls like these is inevitable for those who do not recognise the materialist theory that the human mind *reflects* the objectively real outer world.

5. *Ernst Haeckel and Ernst Mach*

Let us examine the relation of Machism as a *philosophic movement* to the natural sciences. The whole of Machism, from beginning to end, *combats* the "metaphysics" of the natural sciences, designating by that name *naturo-historical materialism*, that is, the instinctive, unconscious, and uncrystallised philosophic convictions of the preponderant majority of scientists as to the existence and objective reality of the external world which is reflected by our mind. Our Machians shamefully pass by this fact in silence, obscuring or confusing the *inseparable* connection between the instinctive materialism of naturalists and *philosophical materialism* as a tendency, a connection which has been known long since and confirmed by Marx and Engels hundreds of times.

Take Avenarius. In his first work, *Philosophie als Denken der Welt*, etc., published in 1876, he combated the metaphysics of the natural sciences (§§ 79, 114 *ff*), that is naturo-historical materialism, and as he himself recognised in 1891 (without having "corrected" his views, however), he had opposed it from the standpoint of theoretico-cognitive idealism.

Take Mach. From 1872, or even earlier, until 1906, he had invariably waged battle against the metaphysics of natural sciences. He was conscientious enough to admit that an entire "host of philosophers," adherents of the philosophy of "immanence," together with certain "isolated scientists as well" are in accord with him.[18] In 1906 Mach also honestly admitted that the "majority of scientists adhere to materialism."[19]

Take Petzoldt. In 1900 he proclaimed that the "natural sciences are thoroughly imbued with metaphysics." "Their notion of experience must still be purified."[20] We know that Avenarius and Pet-

[18] *Analysis of Sensations*, p. xiii.
[19] *Erkenntnis und Irrtum*, 2nd ed., p. 4.
[20] *Einführung in die Philosophie*, etc., Vol. I, p. 343.

zoldt "purify" experience from every trace of recognition of the objective reality given in sensation. In 1904 Petzoldt declared that "the mechanical conception of the modern scientist is essentially no better than the conception of the ancient Indians. It is immaterial whether the world rests on the fabulous elephant or on molecules and atoms, so long as we assume either of them to be real in an epistemological sense, and not merely metaphorically" (Vol. II, p. 176).

Take Willy, the only one amongst the Machians decent enough to be ashamed of his kinship with the immanentists. In 1905 he declared: "The natural sciences, after all, are so presented in many respects, that we must regard them as authorities from which we must rid ourselves." [21]

But this is *thoroughgoing obscurantism* and confounded reaction. To maintain that the belief that atoms, molecules, and electrons are approximately true reflections of *real objective movement of matter*, is equivalent to the belief in an elephant upon which the world rests! It was to be expected that this *obscurantist*, dressed in the clownish garb of a fashionable positivism, would be gladly hailed by the followers of the immanentist school. There is not *one* adherent of that school who would not furiously attack the "metaphysics" of the natural sciences, and the "materialism" of the scientists precisely *because of the recognition* of the objective reality of matter—the objective reality of time, space, the uniformity of nature, etc., etc. Long before the new discoveries in physics which gave rise to "idealistic physics," Leclair, leaning upon Mach, combated the "prevalent materialism which was the characteristic feature of modern natural science"; [22] Schubert-Soldern fought against the "metaphysics of natural sciences"; [23] Rehmke battled with naturo-historical "materialism," the "metaphysics of the man-in-the-street, etc., etc." [24]

The followers of the immanentist school quite legitimately derived from the *Machian* notion of the "metaphysical character" of naturo-historical materialism, their *direct and outspoken* fideist conclusions. If scientific theory does not describe objective reality but consists *only* of metaphors, symbols, forms of human experience,

[21] *Gegen die Schulweisheit*, p. 158.
[22] The title of § 6, *Der Realismus*, etc., 1879.
[23] The title of Chapter II, *Grundlage der Erkenntnistheorie*, 1884.
[24] *Philosophie und Kantianismus*, 1882, p. 17.

etc., then it is beyond dispute that humanity with no less right can create for itself in another domain a "conception no less real than that" of God.

The philosophy of Mach, the scientist, is to science, what the kiss of Judas is to Christ. Mach betrays science into the hands of fideism by ultimately deserting to the camp of idealism. Mach's renunciation of naturo-historical materialism is in every respect a reactionary phenomenon; we saw this quite clearly in discussing the struggle of the "idealist physicists" against the *majority* of naturalists who adhere to the viewpoint of the old philosophy. We shall see this still more clearly by comparing the famous naturalist Ernst Haeckel with the famous philosopher (among the reactionary Philistines)—Ernst Mach.

The storm which *The Riddle of the Universe* caused in all civilised countries showed quite clearly the *partisan character* of philosophy in modern society on the one side, and the present social significance of the struggle of materialism against idealism and agnosticism, on the other. *Hundreds of thousands* of copies of the book were printed. It was immediately translated into all languages and appeared in special popular editions. All this showed quite clearly that it had found its way to the masses, that there were masses of readers whom Haeckel had at once won over to his side. The popular little book became a weapon in the class struggle. The professors of philosophy and theology of all countries of the world began to denounce and "annihilate" Haeckel. Lodge, the eminent English physicist, took it upon himself to defend God against Haeckel. Chwolson, the Russian physicist, made a special trip to Germany in order to publish an obscurantist booklet against Haeckel and to assure the respectable Philistines that not all scientists are adherents of naïve realism.[25] Countless theologians waged war on Haeckel. There was no abuse which was not showered upon him by the official professors of philosophy.[26] It was a joy to see how the eyes of those mummies, arid with the dry dust of a dead scholasticism, began to gleam, and their cheeks became ruddy, perhaps for

[25] O. D. Chwolson: *Hegel, Haeckel, Kossuth und das zwölfte Gebot*, 1906, p. 80.

[26] The book of Heinrich Schmidt *Der Kampf über das Welträtsel*, Bonn, 1900, gives a satisfactory picture of the campaign of the professors of philosophy and theology which was launched against Haeckel. But this book is out of date nowadays.

the first time in their lives, from the spiritual slaps which Haeckel gave them. The priests of pure science and devotees of even the most abstract theories, began to howl with fury, and in all this howling of philosophical cranks (among whom were the idealist, Paulsen, the immanentist, Rehmke, the Kantian, Adickes, and others whose names God only knows) one basic motive was loudly heard: Against the "metaphysics" of science; against "dogmatism"; against the "exaggeration of the validity and significance of science"; against "naturo-historical materialism." He is a materialist; down with him, the materialist! He deceives the public in not calling himself a materialist! The fact that he did not call himself a materialist raised a special storm of fury in the breasts of the respectable professors. And quite characteristic of the whole tragi-comedy [27] was the fact that Haeckel himself *renounced materialism*, and rejected the name. And what is more, far from rejecting religion as a whole, he invented his own brand in the manner of Bulgakov's "atheistic faith" and Lunacharsky's "religious atheism," and defended the union of religion with science *in principle*. What had happened here? What "fatal misunderstanding" had caused this great stir?

The answer is that the philosophical naiveté of Haeckel, his lack of definite partisan motives, his desire to take cognizance of the prevailing Philistine prejudice against materialism, and his personal conciliatory tone and statements on religion, all this helped make *the general spirit* of his book still more prominent, and showed the impossibility of uprooting naturo-historical materialism, and its ultimate irreconcilability with the whole official philosophy and theology. Personally Haeckel did not wish to sever relations with the philistines, but the views he expounded with such an unshakable naïve conviction, could in no way be reconciled with any shade of the prevailing idealism. All these shades of idealism from the crude reactionary doctrines of a von Hartmann, to those of Petzoldt, who deems himself the most progressive and outstanding of the positivists and those of the empirio-criticist, Mach—*all* of them agree that naturo-historical materialism is "metaphysics," that the recognition of objective reality, in accordance with the theories and

[27] The tragic element arose in the assault on Haeckel in the spring of 1908. After a series of anonymous letters addressing Haeckel with such salutations as "dog," "godless," "monkey," etc., some "true German" soul threw a stone of rather an imposing size into Haeckel's study at Jena.

conclusions of science, is the most "naïve realism," etc. And it is *both cheeks* of the "sacred" teachings of the *whole* official philosophy and theology that each page of Haeckel *slaps*. This scientist, who expresses the firmest (albeit uncrystallised) opinions, moods and tendencies of the preponderant majority of naturalists at the end of the nineteenth and beginning of the twentieth centuries, at one stroke, easily and simply revealed what the official philosophy tried to conceal. He showed that there is a base which becomes wider and firmer and beneath whose weight all efforts of the thousand and one little schools of idealism, positivism, realism, empirio-criticism and other confusionism are smashed. This base is *naturo-historical materialism*. The conviction of the "naïve realists" (rather of all of humanity) that our sensations are images of the objectively real external world, is a conviction growing more and more established among the mass of scientists.

Lost is the cause of the founders of new philosophic puppet schools, and of new epistemological "isms"; lost forever and beyond hope of recovery. They may flounder with their "original" puppet systems; they may try to engage the attention of a few admirers by an interesting controversy as to who was the first to exclaim, "Eh,"—the empirio-critical Bobchinsky or the empirio-monistic Dobchinsky.[28] They may even create an extensive "specialised" literature in the manner of the followers of the "immanentist school." But the evolutionary advance of science, regardless of vacillations and hesitations, regardless of the unconscious nature of the scientists' materialism, notwithstanding yesterday's fad of "physiological idealism" or to-day's fad of "physical idealism," completely brushes *aside* all puppet systems and contrivances, and makes way again and again for the "metaphysics" of *naturo-historical materialism*.

As an instance of the above, here is an illustration from Haeckel's *Lebenswunder* in which the author compares the monistic and dualistic theories of knowledge. We adduce the most interesting points of the comparison:[29]

[28] Bobchinsky and Dobchinsky, the stupid and petty characters in Gogol's comedy, *The Inspector General*, each claimed credit for being the first to utter the sound "Eh" when they heard of the arrival of the pseudo-inspector general.—*Ed.*

[29] *Die Lebenswunder*, Stuttgart, 1904, Tables I and XVI.

Monistic Epistemology	Dualistic Epistemology
. . . . .	. . . . .
3. Knowledge is a physiological process, with the brain for its anatomical organ.	3. Knowledge is not a physiological, but a purely spiritual process.
4. The part of the human brain in which knowledge is exclusively engendered is a definite and limited part of the cortex, the phronema.	4. The part of the human brain which seems to act as the organ of knowledge is really only the instrument which allows the spiritual process to appear.
. . . . .	. . . . .
5. The phronema is the most perfect dynamo-machine whose constituent parts, the phroneta, are millions of physical cells. Just as in any other organ of the body, so also in this one, the (spiritual) function of the given part of the brain is a final result of the functions of its constituent cells.	5. The phronema as the *organ* of reason is not autonomous but, together with its constituent parts (phronetal cells), appears only as mediator between the non-material spirit and the outer world. Human reason differs absolutely from the reason of higher animals and from the instinct of lower animals.

We see from this typical quotation that Haeckel does not enter into an analysis of strictly philosophical problems as such and cannot contrast the materialistic and idealistic theories of knowledge. He *ridicules all* idealistic philosophies, especially all contrivances of "special" schools from the point of view of science, without admitting the possibility of any other theory of knowledge besides that of *naturo-historical materialism*. He ridicules the philosophers from the standpoint of a materialist, without being aware that he himself holds the viewpoint of a materialist!

The impotent wrath of the philosophers against this powerful materialism can easily be explained. We have quoted the opinion of the "true Russian," Lopatin. And here is the opinion of Mr. Rudolph Willy, the most progressive of the "empirio-criticists," who is irreconcilably opposed to idealism (!). He refers to Haeckel's views as "a chaotic jumble of certain naturo-historical laws, as for example, the law of conservation of energy, together with a series

of scholastic [80] traditions concerning the substance and the thing-in-itself. . . ."

What disturbed this most respectable "modern positivist"? Well, how could one help being disturbed when one appreciates that all the great doctrines of Avenarius (Willy's teacher)—that the brain is not an organ of thought, that sensations are not images of the external world, that matter ("substance") or "the thing-in-itself" is not an objective reality, etc.—are, from Haeckel's standpoint, nothing but *idealist babble?* Haeckel did not say it in these words because he did not engage in strict philosophy, and made no study of "empirio-criticism" *as such.* But Willy could not help realising that a hundred thousand readers of Haeckel meant a hundred thousand expectorations into the face of Mach's and Avenarius' philosophy. Willy wipes his face beforehand *in the manner of Lopatin,* since essentially the proof which Lopatin and Willy present against every kind of materialism in general, and naturo-historical materialism in particular, is exactly the same. In the eyes of Marxists, the difference between Lopatin and Willy, Petzoldt, Mach, *et al.,* is no greater than the difference between the Protestant and Catholic theologians.

The "war" against Haeckel *proved* that our interpretation of the entire movement corresponds to *objective reality,* that is, it reflects the class nature of *modern* society and the class character of its ideological tendencies.

Here is another little example. Kleinpeter, the Machian, translated from English into German, a work by Karl Snyder quite well known in America, entitled *Das Weltbild der Modernen Naturwissenschaft* (Leipzig, 1905). This work clearly and popularly expounds a whole series of recent discoveries in physics and other branches of science. But it happened that the Machian, Kleinpeter, supplemented the book with a preface in which he remarked that Snyder's epistemology was not "satisfactory" (p. v). Why so? Merely because Snyder has no doubt that the world picture is a picture of how matter moves and of how "*matter thinks*" (p. 228). In *The World Machine* (London, 1907), Snyder says the following (in an implied dedication to the memory of Democritus of Abdera, who lived about 460-360 B. C.): "Democritus has often been styled the grandsire of materialism. It is a school of philosophy that is a little out of fashion nowadays; yet it is worthy of note that

[80] *Gegen die Schulweisheit,* p. 128.

practically all of the modern advance in our ideas of this world has been grounded upon his conceptions. Practically speaking, materialistic assumptions are simply unescapable in physical investigations [p. 140].

" . . . If he likes, he may dream with good Bishop Berkeley that it is all a dream. Yet comforting as may be the legerdemain of an idealised idealism, there are still few among us who, whatever they may think regarding the problem of the external world, doubt that they themselves exist; and it needs no long pursuit of the will-o'-the-wisps of the *Ich* and *non-Ich* to assure oneself that in an unguarded moment we assume that we ourselves have a personality and a being, we let in the whole procession of appearances which come of the six gates of the senses. The nebular hypothesis, the light-bearing ether, the atomic theory, and all their like, may be but convenient 'working hypotheses,' but it is well to remember that, in the absence of negative proof, they stand on more or less the same footing as the hypothesis that a being you call 'you,' Oh, Indulgent Reader, scans these lines" (pp. 31-32).

Imagine the bitter fate of a Machian when his favourite, complex and cunning constructions which reduce the categories of science to mere working hypotheses, are regarded by the naturalists on both sides of the ocean as a thoroughgoing absurdity! Is it to be wondered at that Rudolph Willy, in 1905, combats Democritus as if he were an enemy still alive, thus confirming the *partisan nature of philosophy* and giving himself away as concerns his real position in this partisan struggle? He writes: "Of course, Democritus does not understand that atoms and the void are only fictitious concepts serving merely as instrumental aids (*blosse Handlangerdienste*) and are accepted for reasons of expediency only so long as they can be made use of. Democritus was not sufficiently enlightened to understand it; but neither are our modern naturalists, with few exceptions, enlightened. The belief of Democritus is the belief of our scientists" (p. 57).

There is reason, indeed, for despair! The "empirio-criticists" proved in a "novel way" that space and time are "working hypotheses" and yet the naturalists deride this "Berkeleianism," and follow Haeckel. We are not idealists at all, the empirio-criticists cry; this is calumny; we are only endeavouring (together with the idealists) to refute the epistemological tendency of Democritus; we have been trying to do it for more than 2,000 years, but all in vain! There

remains nothing else for our leader Ernst Mach to do than to dedicate his last work, the result of his life and his philosophy—*Erkenntnis und Irrtum*—to Wilhelm Schuppe and to remark whiningly in the text that the majority of scientists are materialists and that "we also" *sympathise* with Haeckel . . . and his "free-thought" (p. 14).

Here he completely revealed himself as an ideologist of reactionary philistinism who *follows* the obscurantist Schuppe and yet still "sympathises" with the freethinking Haeckel. Such are all the humanitarian Philistines in Europe with their freethinking sympathies and their ideological slavery (both political and economic) to the Schuppes.[31] Non-partisanship in philosophy is only a contemptible cloak of servility to idealism and fideism.

Compare, in conclusion, Franz Mehring's opinion of Haeckel. Mehring not only wanted to be but actually *was* a Marxist. When *The Riddle of the Universe* appeared, towards the end of 1899, Mehring immediately showed that the "work by Haeckel, with its weak and strong points, is very valuable in order to clarify certain confused views in our party as to what *historical* materialism is, on the one hand, and what historical *materialism* is, on the other." [32] The trouble with Haeckel is that he had no conception at all of what historical materialism is, thus giving rise to a great deal of confusion as regards both politics and "monistic" religion, etc., etc. "Haeckel is a materialist and a monist, not an historical but a naturo-historical materialist" (*ibid.*).

Let Haeckel's book be read by those who wish to convince themselves of the inability of naturo-historical materialism to tackle social problems, who wish to get an idea of the extent to which it is necessary to expand and modify naturo-historical materialism before it can develop into historical materialism, before it can serve as a really invincible weapon in the great struggle for the liberation of mankind.

"But not only is it advisable to read Haeckel's book for this purpose. His exceptionally weak side is inseparably connected with

[31] Plekhanov in his remark against Machism did not take pains so much to refute Mach as to precipitate factional strife within Bolshevism. For this petty and miserable manner of dispute in matters of fundamental theoretical controversy, he was sufficiently punished by the two books of the Machian Mensheviks.

[32] Franz Mehring: "Die Welträtsel," *Neue Zeit*, 1899-1900, p. 418.

his exceptionally strong side, *i. e.*, with his direct and luminous exposition (constituting the major part of his book both in scope and significance) of the development of the natural sciences in the nineteenth century, or, in other words, with his exposition of the *triumphant march of naturo-historical materialism* (*ibid.*, p. 419).

CONCLUSION

THE Marxian evaluates empirio-criticism from four points of view.

First and foremost, it is necessary to compare the theoretical foundations of this philosophy with those of dialectical materialism. Such a comparison, to which the first three chapters were devoted shows that along the *whole line* of epistemology there is a *thoroughgoing reactionary tendency* which covers up the old errors of *idealism and agnosticism* with a new brand of trickery and new stock of phrases and sophistical contrivances. Only a total ignorance of what materialism in general is, and of the meaning of the dialectical method of Marx and Engels, can account for any one's speaking of the "fusion" of empirio-criticism and Marxism.

Secondly, it is essential to determine the status of empirio-criticism, a very small school of professional philosophers, towards the other modern philosophic schools. Having started with Kant, both Mach and Avenarius proceeded not towards materialism but back again in the opposite direction towards Hume and Berkeley. Thinking that he had "purified experience" in general, Avenarius in fact had only purified agnosticism of Kantianism. The whole school of Mach and Avenarius tends more and more definitely toward idealism in close union with one of the most reactionary of idealistic schools,—the philosophy of immanence.

Thirdly, we must take into consideration the indubitable connection between Machism and a certain school of thought which has developed in one field of recent science. On the side of materialism there is the large majority of scientists in general, as well as in that special field, namely, of physics. The minority of modern physicists, however, under the influence of the crisis in the old theories (due to the great discoveries of recent years) and under the influence of the crisis in the new physics (which clearly revealed the relativity of our knowledge) because of their ignorance of dialectics fell from relativism into idealism. Idealistic physics, which is in vogue now, is just as reactionary and transitory as the fashionable idealistic physiology of the recent past.

Fourthly, beyond the epistemological scholasticism of empirio-criticism it is impossible not to discern clearly the partisan struggle in philosophy, a struggle which ultimately expresses the tendencies and ideology of classes hostile to one another in modern society. Recent philosophy is as partisan as it was two thousand years ago. The contending parties are in the main materialism and idealism, although their nature may be concealed under a pseudo-erudite phraseological charlatanry or beneath the guise of a stupid non-partisanship. Idealism is merely a cunning and refined form of fideism which, being fully armoured, has great organisations under its control and invariably continues to influence the masses, taking advantage of the least vacillation in philosophical thought. The objective, class rôle of empirio-criticism can be wholly reduced to its servility to the fideists in their struggle against materialism in general and against historical materialism in particular.

THE END

ADDENDA

Десять вопросов референту.

1. Признаете-ли реф-нт, что ф-фія марксизма есть діалектический материализмъ?
   Если нѣтъ, то просимъ не разобрать ли разъ безусловныхъ заявленій Энгельса объ этомъ?
   Если да, то какъ намѣрены мотивировать свой „пересмотръ" діалектич. мат-зма ф-фіей марксизма"?

2. Признаете-ли реф-нт основное ученіе ф-фскихъ спеціально у Энгельса на материализмъ и идеализмъ, проводя среднюю линію между тѣми и другими, конкретно между линіей Энгельса линію Юма в новой ф-фіи, называя ту линію „агностицизмомъ" и объявивъ кантіанство радикальнымъ ф-фскимъ направленіемъ? при чемъ среднюю линію Э. признаетъ компромиссной?

3. Признаете-ли реф-нт, что в основѣ теоріи познанія діал. мат-зма лежитъ признаніе внѣшняго міра и отраженія его в человѣческой головѣ, какъ два явленія, а не как одно?

4. Признаете-ли реф-нт правильнымъ разсужденіе Энгельса о превращеніи „вещей по себѣ" въ „вещи для насъ"? — Фейербах, 15 [illegible]

5. Признаете-ли реф-нт правильнымъ утвержденіе Энгельса, что „жестъ-дѣйственное единство міра заключается въ его „материальности"? [Anti-Dühr., 9 изд. 1886, стр. 28 Г-ий подчеркнул міра]

6. Признаете-ли реф-нт правильнымъ утвержденіе

Facsimile of *Ten Questions Put to the Lecturer*, the original of which is now in the possession of the V. I. Lenin Institute, Moscow. For translation see p. 318.

ADDENDA

I. SUPPLEMENT TO CHAPTER FOUR § 1.

FROM WHAT ANGLE DID CHERNYSHEVSKY APPROACH THE CRITICISM OF KANTIANISM?

In the first section of Chapter IV, we showed in detail that the materialists had criticised Kant from a point of view diametrically opposite to that from which Mach and Avenarius criticised him. It would not be out of place to indicate, at least in brief, the epistemological position of the great Russian Hegelian and materialist, N. G. Chernyshevsky.

Shortly after the criticism of Kant by Albrecht Rau, the German disciple of Feuerbach, the great writer Chernyshevsky, also a disciple of Feuerbach, was the first Russian to set forth his relation to Feuerbach and Kant. Chernyshevsky was an active figure in the Russian literature of the fifties, as an adherent of Feuerbach, but the censorship did not allow him even to mention Feuerbach's name. In 1888, in the completed introduction to the third edition of his *The Æsthetic Relations Between Art and Life* (in Russian), Chernyshevsky attempted to allude directly to Feuerbach, but the censorship, in 1888, allowed not even so much as this passing reference to him! The introduction saw the light only in 1906.[1] In this introduction Chernyshevsky devotes half a page to a criticism of Kant, and of those scientists who follow Kant in their philosophic outlook.

Here is Chernyshevsky's remarkable discourse of 1888:

"Those naturalists who deem themselves builders of all-embracing theories really remain disciples, and usually weak ones at that, of the ancient thinkers who had evolved certain metaphysical methods, and generally of thinkers, whose systems have already been destroyed to some extent by Schelling and altogether by Hegel. It suffices to mention in passing that the majority of naturalists who have attempted to build grand theories on the basis of laws of activity of human thought, have repeated the metaphysical doctrine

[1] *Collected Works*, Vol. X, Part II, pp. 190-197.

of Kant on the subjectivity of our knowledge. . . . [For the information of the Russian Machians who confuse everything we add: Chernyshevsky remains behind Engels in that his terminology shows a confusion in failing to distinguish clearly the opposition between materialism and idealism from the opposition between metaphysical and dialectical thinking; but Chernyshevsky remains on Engels' level in so far as he takes Kant to task, not for his realism but for his agnosticism and subjectivism, not for his recognition of 'things-in-themselves,' but for his inability to derive our knowledge from this objective source.] . . . On the basis of Kant's words they hold the view that the forms of our sense-perception do not resemble the forms of real existence of objects . . . [For the information of the Russian Machians who completely confuse matters we add: The criticism of Kant by Chernyshevsky is directly contrary to that made by Mach and Avenarius and the followers of the philosophy of immanence, because for Chernyshevsky, as for every materialist, the forms of our sense-perception resemble the forms of the real, that is, the objectively existing objects.] . . . and that therefore real existing objects in their real qualities, and actual correlations are unknowable to us . . . [For the information of our Russian Machians who muddle everything we add: For Chernyshevsky, as for every materialist, objects, in Kant's pretentious language, the "things-in-themselves," *actually* exist and are *fully* knowable to us in their existence, in their qualities, and in their actual relations.] . . . and if they were even knowable they could hardly be objects of our reason, which transfers all the material of knowledge into forms totally different from the forms of actual existence, so that the very laws of reason would have only a subjective significance . . . [For the information of the muddleheads, the Machians —we add: For Chernyshevsky, as for every materialist, the laws of reason have not merely a subjective significance, they reflect fully the forms of actual existence of the objects which they resemble, and do not differ from these forms.] . . . so that in reality there would appear to be nothing which would seem to us to be a connection of cause and effect, for there would be neither antecedent nor subsequent, neither the whole nor parts, and so forth and so on. . . . [For the information of the Machian muddleheads we add: For Chernyshevsky, as for every materialist, there is an objective causality or necessity in nature, there is an objective connection between cause and effect.] . . . When naturalists will stop

uttering such metaphysical nonsense, they will be able to work out (perhaps they are at it now) a system of concepts on the basis of science, which will be more exact and complete than those which were propounded by Feuerbach. . . . [For the information of the muddled Machians we add: Chernyshevsky considers as metaphysical confusion *all* deviations from materialism towards idealism and agnosticism.] . . . And meanwhile the best exposition of scientific ideas on so-called fundamental problems of the love of wisdom, has been made by Feuerbach" (p. 196). By the fundamental questions of the love of wisdom, Chernyshevsky means what in modern language is known as the fundamental problems of epistemology or the theory of knowledge. Chernyshevsky is the only great Russian writer who, from the fifties until 1888, was able to remain on the level of consistent materialism and to spurn the wretched confusion of Neo-Kantians, positivists, Machians and other muddleheads. But Chernyshevsky was unable, or, rather due to the backwardness of Russian life, was not in a position to rise to the dialectical materialism of Marx and Engels.

II. TEN QUESTIONS PUT TO THE LECTURER [1]

(1) Does the lecturer acknowledge that the philosophy of Marxism is *dialectical materialism?*

If not, why has he not analysed even one of Engels' numerous statements referring to it?

If he does acknowledge it, why do the Machians call their "revision" of dialectical materialism "philosophical Marxism"? (*See* the collectively issued book of the Machians, p. 234.[2])

(2) Does the lecturer acknowledge Engels' fundamental division of philosophical system into *materialism* and *idealism?* Does he agree with Engels in considering the tendency of Hume in the new philosophy to be steering a middle course between the two, and in calling it "agnosticism" and declaring Kantianism to be a species of agnosticism?

[1] The lecturer to whom the "Ten Questions" were addressed was A. Lunacharsky, at present People's Commissar for Education in the R. S. F. S. R. In the autumn of 1908, Lunacharsky announced he would deliver a public lecture at Geneva on a philosophic topic. As the reader will have learnt from the present volume, Lunacharsky was an advocate of the philosophical tendency of A. Bogdanov, from whom he was separated only by a minor shade of religious difference. Lenin was just then engaged in his work on *Materialism and Empirio-Criticism*, but considered it of importance to come out against Empirio-Criticism even before the publication of his book. This was the more necessary since the Mensheviks (Plekhanov) were making every effort to utilise the philosophical deviations of Bogdanov and Lunacharsky, both of whom were members of the Bolshevik Central Committee, in the political struggle with the Bolsheviks.

Lenin entrusted Comrade I. F. Dubrowinsky, a member of the editorial board of the Bolshevik periodical *Proletary* ("The Proletarian") with the task of answering Lunacharsky's speech, since Dubrowinsky shared Lenin's views. It was for this purpose that Lenin indited the above "Ten Questions." After Lunacharsky's lecture, Dubrowinsky delivered a sharp attack upon the speaker, which in turn brought forth a vehement reply from Bogdanov. The Geneva colony of Russian Bolshevik exiles continued an active discussion of the question, which resulted in clearing the air as to the essential point: The Bolsheviks categorically renounced the philosophical speculations of certain leading party members.

[2] Lenin has in view *The Outlines of the Philosophy of Marxism* consisting of the articles by Bazarov, Berman, Lunacharsky, Yushkevich, Bogdanov Helfond, Suvorov, published in 1909.—*Ed.*

(3) Does the lecturer acknowledge that at the roots of the theory of knowledge of dialectical materialism there lies the recognition of the objective world and its reflection by the human mind?

(4) Does the lecturer regard Engels' argument concerning the transformation of the "thing-in-itself" into the "thing-for-us" as correct? (*Feuerbach,* pp. 15, 65).[3]

(5) Does the lecturer regard Engels' statement that "the real unity of the world consists in its materiality" (*Anti-Dühring,* 1886, p. 28, Part I, § 3, "Apriorism," p. 31), as correct?

(6) Does the lecturer acknowledge Engels' statement that "matter without motion is as inconceivable as motion without matter" (*Anti-Dühring,* p. 45, in § 6, "On *Naturphilosophie,* Cosmogony, Physics, and Chemistry," p. 50) as correct?

(7) Does the lecturer acknowledge the concepts of causality, necessity, natural law, etc., to be reflections in the human mind of the laws of nature and of the external world? Or was Engels wrong in asserting this? (*ibid.,* pp. 20-21 in § 3, "Apriorism," and pp. 103-104, in § 11, "On Freedom and Necessity").

(8) Does the lecturer know that Mach expressed his agreement with Schuppe, the head of the immanentist school, and even dedicated his last and most important philosophical work to him? How does the lecturer explain this adherence of Mach to the frank and avowedly idealistic philosophy of Schuppe, the defender of clericalism and an outspoken reactionary in philosophy in general?

(9) Why was the lecturer silent on the "adventure" of his recent comrade (in *The Outlines*) and Menshevik, Yushkevich, who today (after Rakhmetov) declared Bogdanov to be an idealist? Does

[3] This passage again shows the immense importance which Lenin attached to the characterisation of the Kantian epistemology as a sort of agnosticism. Lenin would agree with Engels' view of this question, as well as with his view on the question of "reflection" (*cf.* also Question 7), a touchstone of the Marxism of any student of philosophy. This must be particularly stressed, since efforts have again been made in recent years to set up an alleged communist philosophy along the lines of the Russian followers of Ernst Mach. These very words of Engels, as well as the latter's Theory of Reflection, of which we are here speaking, have been "criticised" (by Lukacs and Korsch) from an undisguised idealistic point of view, for the purpose of expounding an allegedly communist philosophy as opposed to the epistemology of dialectic materialism. Their sympathetic agreement with the followers of Mach extends even to details. Thus, Lukacs, for instance, likewise denies that Kant was an agnostic, *i. e.,* that Kant considered it impossible to attain knowledge of the objective world.

the lecturer know that Petzoldt in his last book classified a number of Mach's disciples as *idealists?*

(10) Does the lecturer confirm the fact that Machism has nothing in common with Bolshevism? That Lenin many a time protested against Machism? That the Mensheviks, Yushkevich and Valentinov are "pure" empirio-criticists?

III. ON DIALECTICS [1]

THE division of the One and the knowledge of its contradictory parts (*see* the quotations from Philo on Heraclitus in the beginning of Part III, "Lehre Vom Erkennen," in Lassalle's *Die Philosophie Heracleitos des Dunklen* [2]), *is* the essence (one of the "essential" aspects of being, its fundamental, if not *the* fundamental characteristic) of dialectics. This is exactly how Hegel puts the question. Aristotle [3] in his *Metaphysics* is always grappling with it and con-

[1] "On Dialectics," is a portion of the hitherto unpublished philosophical notebooks of Lenin, now in the Lenin Institute in Moscow, which contain a number of notes and excerpts dealing with natural science and philosophy. This fragment was presumably written some time between 1912 and 1914. It was first published in the periodical *The Bolshevik*, Moscow, 1925, Nos. 5-6.

[2] The passage quoted is on page 400 of Ferdinand Lassalle's *Gesammelte Reden und Schriften*, ed. by Eduard Bernstein, 1920, and reads as follows: "For the One is a whole consisting of two opposite poles, so that after it is *sundered* the opposite parts may be recognised."

Heraclitus (544-475 B. C.), also called the "Obscure," flourished in the commercial city of Ephesos in Asia Minor, and was one of the most prominent dialecticians of ancient times. According to his conception, the process of *becoming* is a constant transition from the finite to the infinite and *vice versa;* process that is indissoluble and unending, and moving between extremes; it is the unity of being and non-being, the essence of the universe. In this inconstancy of all things, in a ceaseless transformation of all being, Heraclitus beheld the general law of the universe. All things are in flux; there is nothing permanent, with the result that "we cannot step twice into the same river." The world he conceived both as war and peace, summer and winter, flux and time, satiation and hunger, etc. *Opposition*, the ruling principle of the universe, is, according to Heraclitus, inherent in all things, with the result that all of existence really constitutes a *union of opposites*." "The All has its origin in the One and the One in the All."

[3] Aristotle (384-322 B. C.) could not agree with the dialectic point of view and waged a constant polemic against Heraclitus, whose philosophy appeared so obscure for the very reason that its dialectic character was not altogether understood. For Aristotle opposites are possible only in successive series and as mutually exclusive of each other. A thing exists or it does not, a man is living or dead, a thing cannot be one thing and at the same time another. In no case can a thing be a union of opposites. Thus, Aristotle declares, against Heraclitus, that the latter's principle which declared "being and non-being to be the same thing," contradicted the law of contradiction. In another passage he states that, according to the philosophy of Heraclitus, it is not so much true that everything is, as that *nothing* is at all. Finally, he criticises Herac-

tinually engages in a *struggle* with Heraclitus (respecting the ideas of Heraclitus).

The correctness of this aspect of the content of dialectics must be tested by the history of science. This aspect of dialectics customarily received very little attention (*e. g.*, by Plekhanov): the identity of opposites is taken as the sum-total of *examples* (for example, "a seed," and in Engels', for example, "primitive communism." [4] But this is in the interest of popularisation and not as the law of *knowledge* (and as the law of the objective world).

litus in the following terms: "Those who state that *being* and *non-being* can exist simultaneously will be found rather to be declaring that everything is *at rest* than that everything is *in motion;* for that *into which* something is evolving is not yet in existence, since everything is ultimately an attribute of anything." Aristotle means that, since Heraclitus would have everything both *be* and *not be*, in other words, already contain both factors of the contradiction within itself, whose union it constitutes, there is no possibility of motion from one contradiction to the other.

[4] In his book, "*On the Question of the Evolution of the Monistic Conception of History*" (in Russian) Plekhanov interprets two passages from Friedrich Engels' *Anti-Dühring*. One of the passages reads:

"Let us take a grain of barley. Millions of such kernels are ground, boiled and brewed, and then consumed. But if such a barley-corn encounter the conditions normal for its development, if it fall upon favorable soil, the influence of the heat and of moisture will effect a peculiar transformation in this seed. It sprouts; the seed as such disappears, is negated, and in its place appears the plant, the negation of the seed. But what is the normal life course of the plant? It grows, blossoms, is fructified, and finally produces other grains of barley, and, as soon as these have matured, the stalk withers and is negated in its turn. But the result of this negation of the negation is again the barley-grain with which we began, and not one grain merely, but an increase ten or twenty or thirty fold." (*Anti-Dühring*, p. 138.)

In the other passage, Engels cites Rousseau's ideas as an example of a dialectic mode of thought, and shows that according to Rousseau social evolution proceeds by means of antagonisms: "In the state of nature and savagery, men were equal, and since Rousseau considers even language to have been a distortion of the natural state, he is perfectly right in applying the equality between animals of one type, as far as this equality may prevail, also to this type of animal-men, recently classified by Haeckel, hypothetically, as Aladi, *i. e.*, "speechless." But these equal animal-men possessed a quality not characteristic of the other animals: perfectibility, the capacity of continuing their evolution and this becomes the cause of inequality. Rousseau therefore regards the beginnings of inequality as a forward step. But this progress had its antagonisms: it was at the same time retrogression. . . . Each new step in advance of civilisation is simultaneously a new advance towards inequality. All the institutions of society, which arise simultaneously with civilisation, sooner or later serve purposes and ends opposite to their original ones. It is an unquestionable fact, and furthermore, the basic law of our body politic, that the people created monarchs in order to preserve and protect its own freedom and not to destroy it." And yet these princes necessarily become the oppressors of the people and even carry their tyranny so far that the resulting in-

In mathematics: + and —. The differential and integral.

In mechanics: Action and reaction.

In physics: Positive and negative electricity.

In chemistry: The combination and dissociation of atoms.

In the social sciences: The class struggle.

The identity of opposites (more accurately, perhaps, their "unity" although the difference between the expressions "identity" and "unity" is not very essential here. In a certain sense both are correct [5]) is the recognition (discovery) of the *mutually exclusive* and opposed tendencies in all the phenomena and processes of nature (including spirit and society). The condition of the knowledge of all processes of the world as in "*self-movement*," in spontaneous development, conceived in its vital and living form, is the knowledge of the unity of their opposites. Development is "struggle" of opposites. Two fundamental (or is it the two possible? or is it two historically observed?) conceptions of development (evolution) are: development as decrease and increase, as repetition; and development as a unity of opposites (the division of the One into mutually exclusive opposites and their reciprocal correlation).

The first conception is dead, poor and dry; the second is vital. It is *only* this second conception which offers the key to

equality, becoming intolerable, is again changed into its opposite, and becomes once more the basis of equality: before the despot all are equal, *i. e.*, equal to zero. . . . And thus inequality again turns into equality, but not into the old primitive equality of speechless primitive man, but into the higher equality of the social contract."

Plekhanov defends these two passages against the attacks of the subjective sociologist N. Mikhailovsky.

[5] The "unity" of opposites may also be regarded as an "identity" of opposites. Lenin here explains when this is the case. It is wrong to interpret this identity as signifying that the originally uniform, oppositionless phenomena first provide occasion for the gradual unfolding of opposites, which thereupon disappear in the "synthesis." As opposed to this view, Lenin again reinstates the Heraclitean view to its rightful position, according to which each phenomenon includes within itself the unity of the opposites (*cf.* the quotation in the second footnote to this fragment), which are not recognisable as opposites, however, until the phenomenon, as Heraclitus puts it, "has been sundered in twain," *i. e.*, when the opposites threaten to destroy the dialectic unity. Up to this phase one might speak of an *identity* of opposites, "in a certain sense," so long as one does not go so far as to consider oppositions to be lacking altogether.

We must here specifically point out that Lenin here extends dialectics expressly to cover the field of nature and the study of nature, which is denied by certain idealistically inclined "Marxists."

understanding the "self-movement" of everything in existence; it alone offers the key to understanding "leaps," to the "interruption of gradual succession," to the "transformation into the opposite," to the destruction of the old and the appearance of the new.

The unity (the coincidence, identity, resultant force) of opposites is conditional, temporary, transitory, and relative. The struggle of the mutually exclusive opposites is absolute, as movement and evolution are.

N. B. The distinction between subjectivism (scepticism, sophistry, etc.) and dialectics among other things lies in this, that in ("objective") dialectics the distinction between the relative and the absolute is itself relative. For objective dialectics the absolute is also to be found in the relative. For subjectivism and sophistry the relative is only relative and excludes the absolute.

On the first conception of movement, self-movement, its impelling force, its source, and its motive still remain in the shadow (or that source is transferred outside, becomes subject, etc.). On the second conception, chief attention is directed precisely toward knowledge of the source of "self"-movement.

Marx in his *Capital* at first analyses the simplest, the most ordinary, fundamental and commonplace thing, a relation to be observed billions of times in bourgeois commodity society: the exchange of commodities. In that simple phenomenon (in that "cell" of the bourgeois society) the analysis reveals all the contradictions (and their embryo as well) of modern society. The subsequent exposition shows the development (both, growth and movement) of these contradictions and of that society in the sum total of its fundamental parts, from beginning to end.

Such must also be the method of exposition (and of study as well) of dialectics in general (for the dialectics of bourgeois society is only a particular illustration for Marx of dialectics in general). . . . To begin with the simplest, most ordinary, and commonplace notion, from *any* proposition you please: "The leaves of the tree are green; John is a man; a poodle is a dog, etc. . . ." Even here (as Hegel's genius recognised) we have an instance of dialectics: the *particular* is the *general* [*cf.* Aristotle's *Metaphysics*, translated by Schwegler, Vol. II, 8, 40, 3., Book IV, Chapters 8 and 9: "*Denn natürlich kann man nicht der Meinung sein, dass es ein*

Haus (a house in general) *gebe ausser den sichtbaren Hausern.*[6]] (For it is naturally impossible to think that there exists a house in general over and above visible houses.)

Consequently opposites (the particular as opposed to the general) are identical: the particular exists only in that connection which leads to the general. The general exists only in the particular and through the particular. Every particular is (in one way or another) a general. Every general is (a fragment, or an aspect, or an essence of) a particular. Every general comprises all particular objects merely approximately. Every particular is an incomplete part of the general, and so forth, and so on. Every particular is bound by thousands of threads and nuances with other *kinds* of particulars (objects, phenomena, processes), etc. There are found here *already* the elements, the germinal conception of *necessity* of objective connection in nature, etc. The contingent and the necessary, appearance and essence are already existent here. For in saying, "John is a man, the poodle is a dog, this is a leaf of a tree, etc.," we disregard a series of characteristics as *contingent;* we separate the essential from the apparent, and put one in opposition to the other.

Thus in any expression one can (and must) reveal as in a cell the embryo of all the elements of dialectics, showing thereby that dialectics is in general the characteristic of all human knowledge.

And from its side, natural science shows us (and here again it must be demonstrated in *any* simple instance) the objective nature with the same qualities of the transformation of the particular into the general, of the contingent into the necessary, transitions, nuances

[6] Hegel: *Enzyklopädie der philosophischen Wissenschaften,* 2nd ed., page 162:

"One's first impression about the judgment is the *independence* of the two extremes, the subject and the predicate. The former we take to be a thing or characteristic in its own right, and the predicate, a general characteristic outside of the subject and somewhere in our heads, which latter characteristic is associated by us with the former, thus forming a judgment. . . . The abstract proposition is expressible in the statement: the *individual* is the *general* (universal). These are the features possessed by *subject* and *predicate* with reference to each other, when the factors of the concept are taken in their immediate connotation or in their first abstraction. . . . It shows a strange want of observation in the logic-books, that in none of them is the fact stated that in *every* judgment there is such a statement made, as, the *individual* is the *universal,* or, still more definitely, the *subject is the predicate* (for instance, God is absolute spirit). No doubt the notions of individuality, universality, subject and predicate, are also quite different, but it remains none the less true in general that every judgment is really a statement of identity."

and the reciprocal connection of opposites. Dialectics *is* the theory of knowledge (of Hegel and) of Marxism. It was exactly this aspect of the matter (it is not a question here merely of the "aspect" but of the essence of the matter) to which Plekhanov paid no attention, not to speak of other Marxists.

Knowledge appears in the form of a series of circles in Hegel (*see* his *Logik* [7]) as well as in Paul Volkmann (*see* his *Erkenntnistheoretische Grundzüge der Naturwissenschaften* [8]), the modern "epistemologist" of natural science, the eclectic and enemy of Hegelianism (which he did not understand).

Is chronology necessary? No!

These are the "circles" in philosophy:

Ancient: from Democritus to Plato and Heraclitus' dialetics.

Renaissance: Descartes versus Gassendi (Spinoza?).

Modern: Holbach-Hegel through Berkeley, Hume, Kant, Hegel-Feuerbach-Marx.

[7] Hegel: *Logik*, Part II, page 503:

"It therefore results that every step in the *progress* of continuous definition, as it recedes from the indefinite beginning, constitutes also a *reverse approach* to it, and that the two apparently different elements, namely, the *reverse process of affirming the beginning*, and the *advancing continuous definition* of it actually coincide and are identical. The method which thus moves in a circle . . ."

"By virtue of the above indicated character of the method, the science constitutes a *circle* returning upon itself, at the beginning of which, at the simple foundation, its conclusion is again met with, returning from the other direction: furthermore, this circle is a *circle of circles;* for each individual member, being an animated phase of the method, is the reflection-in-itself, which, in returning to the initial stage, simultaneously constitutes the beginning of a new member."

[8] Paul Volkmann, Professor of Theoretical Physics at the University of Königsberg in Prussia, the author of a number of epistemological works written from the point of view of the physicist. In the work of Paul Volkmann mentioned above, 2nd ed., Leipzig, 1910, in connection with Lenin's "circular motion of knowledge," the following passages are to be considered:

"I should therefore wish to oppose to the *external adaptation,* (*i.e.,* the adaptation of subject to object.—*Ed.*) with which this observation is connected, an *internal adaptation.* If external adaptation may be figuratively rendered by the process of oscillation, the internal adaptation may be figuratively rendered by the process of oscillation, the internal adaptation may be represented by the process of circulation. It is in this sense that Liebig declares: 'Progress is a circular motion with an increasing radius,' and it is in this sense that Liebig draws a picture of a spiral and inscribes under it the words: '*inclinita resurgit.*'" (Page 35.)

Furthermore, in another passage: "The process of knowledge is and always will be an oscillating and asymptotic process. To the layman such a treat-

Dialectics as a *living*, many-sided knowledge (with a continually increasing number of aspects) with an infinite number of shadings of every sort and approximations to reality (with a philosophical system which out of these various shades and approximations develops into a whole)—its content is immeasurably rich compared with "metaphysical" materialism, whose fundamental *trouble* lies in its inability to apply dialectics to the *Bildertheorie* (theories of development), to the process and development of knowledge.

Philosophical idealism is nonsense only from the standpoint of a crude, simple, and metaphysical materialism. On the contrary, from the standpoint of dialectical materialism philosophical idealism is a one-sided, exaggerated, swollen development (Dietzgen) of one of the characteristic aspects or limits of knowledge into a deified absolute, into something *dissevered* from matter, from nature. Idealism means clericalism. True! But philosophical idealism is (more "*correctly*" expressed and in "*addition*") a road to clericalism through one of the *nuances* of the infinitely complicated *knowledge* (dialectical) of man.

The knowledge of man does not follow a straight line, but a curved line which infinitely approaches a system of circles, the spiral. Every fragment, every segment, every bit of this curved line can be transformed (transformed one-sidedly) into an independent, complete, straight line which, if one does not see the wood for the trees, leads us directly into the mire, into clericalism (which is strengthened by the class interests of the ruling class). Rectilinearity and one-sidedness, stiffness and rigidity, subjectivism and subjective blindness—these are the epistemological roots of idealism. That clericalism (philosophical idealism) possesses natural epistemological roots, is not unaccountable. It is not groundless; it is undoubtedly a sterile flower, yet one growing on the living tree of a prolific, true, powerful, omnipotent, objective, and absolute human knowledge.

ment, based in the last analysis on a continuous merging of induction and deduction, may appear to be a vicious circle. No doubt the advancing knowledge of the natural sciences in many cases does move in a circle—yet the sense of this statement includes the fact that each new cycle of cognition is associated with a host of finer measurements and corrections." (Page 359.)

In connection with Lenin's designation of Volkmann as an eclectic it should be remarked that Volkmann finally evolved into an out-and-out solipsist. He is at present an associate-editor of the *Annalen der Philosophie*, published by Hans Vaihinger, the "*Als-Ob*" philosopher, in which he advocates "Fictionalism," the latest tendency in the bankrupt system of bourgeois idealism.

APPENDIX

DIALECTIC MATERIALISM AND THE PHILOSOPHY OF DEAD REACTION

By V. Nevsky

It would seem at present, when "the chief task before the working class is to transform the world," that to engage in a tedious repetition of well-established theoretical truths is untimely. Indeed, there are so many practical things to be done, there is such an urgent need for a determined and radical change, that there is practically no time left for pleasant theoretical research and work. However, the interests of that very cause, of that determined change of the world, of which Marx speaks in his Eleventh Thesis on Feuerbach, demand of all communists who are not indifferent to the success of the revolution, to turn at least once in a while to these theoretical questions, long since settled, and so far not refuted by anyone.

This necessity of indulging in seemingly abstract questions of philosophy, even at a time of unprecedented struggle between the proletariat and the bourgeoisie, follows from the circumstance, that the reactionary disintegrating classes and their conscious and unconscious advocates and ideologists do not at once capitulate before the new class and the new views and forms (in all domains of life, including that of science).

Appearing to have become reconciled to the new order, those disintegrating classes are really attempting to explode it from within. There are some amongst them who are doing so and are fully aware of their deeds, who join the new institutions and organizations under the pretext of learned, experienced and "indispensable" specialists in order to betray the proletariat. Others fully, though unconsciously, convinced that they serve the new cause, drape their backward and reactionary views in a mantle of scientific forms, thus infusing the consciousness of the struggling masses with the poison of a decaying corpse.

It is hard to tell which method is more harmful to the working class: the rude attempt of the raging bourgeois to penetrate into the enemy's camp under the guise of the most devoted adherent of the new order, or the unconscious attempt to prove to the masses that a reactionary ideology is the best weapon in the hands of the proletariat in the struggle with its class enemy.

Bogdanov and his followers who wax enthusiastic over the numerous "works" of that prolific philosopher, belong to the category of those who are endeavouring to assure the working class that the philosophy of a dead, decaying reaction is the very last word of science.

Lenin was indeed correct in the concluding lines of his book (*Materialism and Empirio-Criticism*) when he said the following:

"Beyond the epistemological scholasticism of empirio-criticism it is impossible not to discern clearly the partisan struggle in philosophy, a struggle which ultimately expresses the tendencies and ideology of classes hostile to one another in modern society. Recent philosophy is as partisan as it was two thousand years ago. The contending parties are in the main materialism

and idealism, although their nature may be concealed under a pseudo-erudite phraseological charlatanry or beneath the guise of a stupid non-partisanship" (p. 311).

Such a philosophy of idealism, under cover of a set of new terms, is contained in the thought of Bogdanov as well as in all his numerous "works" which have appeared in his various books or are scattered through different periodicals.

After his *Basic Elements of the Historical Outlook on Nature, Epistemology from the Historical Standpoint* and the three well-known volumes of *Empirio-Monism,* there appeared such unusual works as *Tectology* (or *The Universal Organisational Science,* parts I and II); *Science of Social Consciousness; Brief Course of Ideological Science in Questions and Answers; Problems of Socialism;* collected articles, new and old, under the title *New World; Socialism of Science* (the scientific problems of the proletariat); *The Philosophy of Vital Experience; Popular Outlines; Materialism, Empirio-Criticism, Dialectic Materialism, Empirio-Monism—the Science of the Future; Brief Course of Political Economy,* newly corrected and completed edition (tenth) by S. M. Dvoilatzky with the collaboration of the author; *The Primer of Political Economy* (an Introduction to Political Economy, in questions and answers); articles on various issues, pamphlets, and separate books which are not yet collected by the author, *e.g.,* articles in *Proletarian Culture, Outlines of the Science of Organisation,* Nos. 7-12, articles on questions of proletarian poetry and others. (All these titles are in Russian—*Ed.*)

We are certain that we have not fully exhausted the list of this prolific writer, but fortunately there is no need to do so for our purposes. After glancing over the chief works enumerated above it is quite sufficient to convince oneself that we are here dealing with the very same idealist, whom we have known before as the follower of Mach and Avenarius, as the critic of the materialism of Marx and Engels. The only difference is that now, after his works on empirio-monism, Comrade Bogdanov has begun to criticise Marx more openly while his philosophy has become more deadly reactionary with the course of time.

That this is really so, one will see after an analysis of that truly remarkable book of Bogdanov's *The Philosophy of . . . Dead Reaction,* we meant to say, *The Philosophy of Vital Experience.*

How was the issue put in the dispute of 1905-1910 between the orthodox disciples of Marx and Engels and their adversary, Bogdanov, the author of *Tectology?* The same way as it had been put in its time by Marx and Engels in their struggle with the bourgeois, idealist philosophers.

"The great foundation question of all, and especially of new, philosophies is concerned with the relation between thinking and being," says Engels. " . . . As this question was answered one way or the other the philosophers were divided into two great camps. The one party which placed the origin of the spirit before that of nature, and therefore in the last instance accepted creation in some form or other—and this creation is often, according to the philosophers, Hegel for instance, still more odd and impossible than in Christianity—made up the camp of idealism. The others, who recognised nature as the source, belonged to the various schools of materialism." [1]

"Idealism and materialism, originally not used in any other sense, are here not employed in any other sense." [2]

How did Bogdanov answer the question before the great November Revolu-

[1] *Ludwig Feuerbach,* p. 56.

[2] *Ibid.,* p. 58.

tion? In Book I of his *Empirio-Monism* he thus defines the objectivity of the world and of physical bodies: "The objective character of the physical world consists in that it exists not for me personally but for all; it has, in my opinion, the same significance for everybody as it has for myself."[3] And further: "In general, the physical world is that which is socially-agreed-upon, socially harmonised, in a word, is that which is *socially organised experience.*" [4]

The basis of the objectivity of the physical world of nature which, is according to Engels, the foundation stone of all, is included in the domain of collective experience.

That view was held by our philosopher at the time when his empirio-monistic system was in the process of creation. What is at present his attitude toward this issue? Has he renounced those views? Has he changed them? Not at all, they remain the same. He says: "We regard reality, or the realm of experiences, as the human collective practice in all its vital content, in the sum-total of efforts and resistances which constitute this content." [5]

And just as the world picture reduced itself before to elements of sensation, so now these very well known elements are posited as the foundation stone of everything.

The outline drawn by him in *Empirio-Monism* is as follows: elements, the psychic experience of men, the physical experience of men, and consciousness. And in his *Philosophy of Vital Experience* this outline remains essentially the same.

One finds here, too, the very same elements of experience, the same definition of the objective, of the physical as the socially organised experience of men. Here is his proof:

"The element of experience is a product of social effort embodied in knowledge" (p. 217). "If my fellow men say: 'Yes, we see and hear the same as you do,' *that is, if my experience and their experience agree and are socially organised, then one has to do with real objects, objective or physical phenomena.* If, on the other hand, they state that for them, that of which I inquire does not exist, it becomes clear that my experience in this respect is only 'subjective,' only psychical, an illusion or an hallucination" (p. 221, italics mine—*V. N.*).

From these quotations it is evident, that Bogdanov clings to his previous position, to purest idealism. For he obstinately maintains, now as before, that the physical world is "socially organised experience," that is, the experience of men, and, hence, there was not any physical world, since there was not any "socially organised experience." This is an absurdity which can only be attained by an empirio-monist. For, holding the position that the physical world is the "socially organised experience" of men, the empirio-monist must answer the question, as to whose social experience the world can be referred before men emerged.

The following quotation will clearly show, that the confusion introduced in Bogdanov's previous "works," remains intact:

"An astronomer discovers a new comet, defines its position in space, its orbit, size, form, composition, etc. Until he has made public this data, nobody save himself, has any knowledge about it. The comet, consequently, belongs only to his individual experience, but not to social experience. Yet the comet had been found, defined, measured, investigated through *scientific* methods

[3] *Loc. cit.*, p. 25.
[4] *Ibid.*, p. 36.
[5] *Philosophy of Vital Experience*, p. 214.

which have been *collectively* worked out by men in order to organise their experience. It means that it already entered into *socially organised* experience; that it took its place in the series of objective, physical phenomena. Practically, it will express itself in the fact, that any other observer will find the comet at such a place and in such a state as that in which the first had discovered it" (p. 221, Bogdanov's italics).

One can hardly believe that Bogdanov is unaware of the fact that he has fallen into an idealistic hole by positing these elements and socially organised experience, which are represented by the physical, objective world. He is aware of it, because on p. 225 of his book he quotes the late Plekhanov's reply to this question, but by realising it, he falls into a still greater idealistic absurdity.

"Physical experience," says Bogdanov, "is somebody's experience, namely, the experience of all of humanity in its development. This is a world of a strict, settled, elaborated uniformity of law, of definite, precise correlations; it is a well-established world where all propositions of geometry, all formulæ of mechanics, astronomy, physics, etc., are valid. . . . Is it possible to accept this world, *this* system of experience, independently of mankind, is it possible to say that it existed prior to it?" (p. 226).

How does Bogdanov answer this important question, of whether or not the physical world existed prior to the existence of men, and particularly, of whether bodies attracted each other according to the law of gravitation?

"Discard the 'social practice' of measurements, the establishment of standards of measure and calculation, etc., and there will remain nothing of the law of gravitation. Therefore, when we say that the law was valid prior to the existence of men, it is not the same as saying *independent* of men" (pp. 226-227, Bogdanov's italics).

It is clear, that from such a standpoint neither matter exists, nor does the world exist, which is the object of natural science, and in which we materialist sinners live who recognise "holy matter" (of which another critic of materialism, Bazarov, has made game). It is also clear that from such a viewpoint "matter is resistance to activity" (p. 55); or that matter is "nothing else than resistance to collective labour efforts" (p. 89); that "the unfolding panorama of work-experience is characterised as Nature" (p. 44); that "the universe represents itself to us as the infinite stream of organising activity" (p. 240), and that the world-picture is a continual series of forms of organisation of *elements*, of forms, which develop through struggle and interaction, without a beginning in the past and without an end in the future" (p. 241, italics mine—*V. N.*).

Hence, the issue is again reduced to elements, that is, to the "products of social labour, embodied in knowledge!"

Thus, the whole substance of Bogdanov's idealistic views is expounded in these "popular outlines" of the *Philosophy of Vital Experience*. The materialism of the ancients, the materialism of the eighteenth century and the dialectic materialism of Marx and Engels are here criticised from the point of view of empirio-monism.

According to him the "fundamental conception of dialectics, of Marx as well as of Hegel, has not been completely finished and clarified. And because of this, the very application of the dialectic method becomes inexact and blurred. There are elements of arbitrariness in its plan. Not only do the bounds of dialectics remain undefined but even its very sense becomes perverted" (p. 189).

And this is because the founders of scientific socialism have not come to

the concept of "resistance to activity," have not come to the notion of "organisational process," for, says A. Bogdanov:

"In applying our methods we have from the very beginning defined dialectics as follows: an *organisational* process which proceeds through struggle of contrary tendencies. Does this correspond with Marx's conception? Not altogether. There the point at issue is *development* and not the organisational process" (p. 189).

At last Bogdanov has found the proper language and frankly confessed that he has gone further than Marx, has surpassed him, has developed his doctrine further, and purged it of all errors and deviations.

This purification of Marx's doctrine of dialectic materialism of its errors, is effected through Bogdanov's creation of the system of *Tectology* (the Universal Organisational Science).

Now, what kind of a science is this which corrects the errors and deviations of Marx? It is a science of construction, a science which "must scientifically systematise the organisational experience of mankind."

In the two parts of this *Tectology* (so far only two parts have appeared) and, probably, in the "popular" exposition of the tectological views in *Proletarian Culture* (in Russian), we unfortunately behold our old acquaintances of Bogdanov's philosophy: the complexes and the elements.

We learn that (1) "in all its activity (work and reflection), mankind has for its object various *complexes* which consist of various *elements*,"[6] that (2), the concepts of complex and element are correlative concepts; that a complex is what is decomposed into elements and elements are what constitute the complex; that the concepts of resistance and activity, too, are correlative concepts: that "resistance is the same activity (only taken from a different angle) as contrasted with another activity," and that since the universe is nothing but a "continual series of forms of organisation of elements," an "infinite stream of organising activity,"[7] therefore *Tectology* embraces the material of all sciences. This is the "only science which not only must work out directly its methods, but must investigate and unite them as well. It, therefore, represents the completion of the cycle of sciences" (*Tectology*, Part I, p. 38).

In what does the method of this curious science, which completes the cycle of all sciences, consist?

"To enter the domain of Tectology proper, one must separate one's self from the concrete-physiological character of the elements, to substitute for them indifferent symbols and express their connection through an abstract scheme. This scheme we shall compare with others which were obtained in a similar fashion, and thus work out *tectological generalisations* which yield us conceptions of *forms* and *types* of organisation" (p. 39).

From a further analysis one sees that those tectological schemes are abstract; schemes emptied of their content, but they are universal and they "are applicable to an infinite variety of cases" (p. 48).

Indeed, farther on we see that there is no lack of those schemes with Bogdanov, even though there is a lack of something else.

Since the principle of selection has an unlimited, far-reaching application in human theory and practice, its tectological character is manifested by it: the mechanism of selection is universal. There is the conservative and progressive selection; "*the progressive selection changes the structure of the complexes*" (p. 64); "the conservative selection gravitates toward *statical* results of the

[6] *Tectology*, Part I, p. 29.

[7] *Philosophy of Vital Experience*, pp. 240-241.

type of *stable equilibria*" (p. 107). "*Positive selection* changes the structure

of the complex *in the direction of greater dissimilarity of elements and greater complexity of inner correlation; negative selection* changes the structure of the complex *in the direction of greater similarity of elements, less complexity of their connection*" (p. 108). In a word, selection is an elementary-universal mechanism through which everything in the world can be explained—Darwinism, Malthusianism, the evolution of matter, and the primary impelling reactions of protoplasm, and the methods of procuring gold, as well as of such human organisations as sects and parties. Starting from this elementary-universal mechanism of selection, Bogdanov deduces the *laws* of "ingression."

First of all he gives the conception of the "valid connection." This is the "form of our thinking on organisational combinations" (p. 114). But as this valid connection between the complexes cannot always be established, there is a necessity of intermediate complexes, that is, in ingression itself.

In what the laws of ingression consist, probably only Bogdanov knows. But from the two parts of his *Tectology* the reader cannot extract anything save bare, abstract meaningless notions. As for the rest, there is in the two books, besides these notions, a great number of new terms which confuse the exposition of the metaphysical system, already sufficiently obscure.

Bogdanov himself, who usually likes to protest against the barbarous terminology of the bourgeois sciences, piles up scores of new terms. One will find all kinds of names, and wonder where in the world he obtained them. Here are copulation and conjugation (terms taken from Biology), ingression, egression, digression, disingression and systematic differentiation, and all sorts of combinations of these symbols, complexes and elements.

We are not engaged in a critical review of Bogdanov's works. We are only making a few remarks in view of the appearance of the book *Materialism and Empirio-Criticism*. It is, therefore, impossible for us to expound in detail, either the content of all the works of our philosopher, or his philosophy.

Our purpose is to illustrate by two or three references to his fundamental propositions, that this philosophy, in its starting points, rests on the same idealistic foundations, sensation-elements and complexes; on the denial of matter, of the external world; on the negation of the tenets of every kind of materialism and natural science, and on the denial that matter, and not spirit, is the *prius*.

It would be easy to show in all of Bogdanov's new works, how the idealistic tenets are perniciously reflected in his philosophy; how they convert his postulates into bare abstract forms and lead to the proposition, that the physical world is the socially organised experience; that matter is resistance to activity; that activity is resistance, and *vice versa;* that "disingression consists in the mutual destruction of contrary *directed activities*" and so on and so forth.[8]

But this is neither the time nor place to pause upon it. It is interesting only to note that Bogdanov presents this metaphysical nonsense to the workers in a simpler form than that in the *Tectology* with its conjugation, ingression, disingression and other terms and "laws" of ingression.

In the article "Science and the Working Class" (in Russian) he speaks of the same general organisational science and the socialisation of science in general.

Only God knows what this socialisation means. But the substance of it is that we must immediately start the creation of that Tectology, or rather the organisation of it, for that Tectology has long been in existence.

Starting from the correct proposition that the bourgeoisie gave to the proletariat little of knowledge, a falsified science; that the class structure of

[8] *Tectology*, Part II, p. 14.

society reflects itself in the very scientific foundations of the bourgeois scientists; that they create science in the bourgeois class society, Bogdanov comes to the conclusion that the task of the working class is to build its own proletarian science, to socialise it.

"The propagation of science," he says, "amongst the masses proves to be not merely its democratisation but its real *socialisation.*" [9]

What that socialism of science means is not exactly stated, but it is evidently the same Tectology, about which so much metaphysically obscure and shallow stuff has been written.

The idea is that the "organising activity is always directed toward the formation of some *systems* out of some parts and *elements*" (p. 79). As we see, one cannot make a single step without these famous elements of Bogdanov.

"Now, what in general are these elements? What does man organise through his efforts? What does nature organise through its evolutionary processes? One characteristic may be applied in all cases—these or other *activities* or *resistances* are organised. Investigating, we convince ourselves (1) that there are only one and not two characteristics, (2) that it is universal, and that there are no exceptions to it" (*Ibid.*, p. 79).

This is a popular exposition of Bogdanov's "scientific" views which deny the existence of matter and substitute the notion of energy in place of Marx's and Engels' notion of matter. "Matter is reduced to 'energy,' that is to action on activity" (p. 80).

It would be fruitless to ask Bogdanov to what sort of action matter is reduced, or what this activity is. We shall hear nothing, save the fact, that science has already decomposed the atoms, that activity is resistance, and *vice versa;* that the light waves interfere according to certain laws; that conjugation is a general fact; that the whole business is again reduced to the elements of experience, to complexes, that is, to that metaphysical devil's spectre, which under the aspect of science destroys, or attempts to destroy, in the reader the conviction that the physical world has existed independently of those "elements" and "complexes"; the conviction that not those elements and complexes are the prime, basic factors, but matter that which Bogdanov so cordially dislikes and which according to him is nonexistent.

And as activities are organised, and as the "exact definition of organising is such that this notion is proved to be universally applicable in all stages of being and not only in the domain of life," a very significant inference follows therefrom:

"These same elements of the universe, which are so various and distant one from the other, both quantitatively and qualitatively, can be subordinated to the same organisational methods, to the organisational forms" (p. 91).

The mystery of science consists in the connection of the different incommensurable series of phenomena. From this the possibility of prediction follows, and as all elements of the universe can be subordinated to the very same organisational methods, the riddle is solved. "The solution is the object of universal organisational science" (p. 92). And if this is so, it is necessary to acquaint the workers through these popular articles with the "tectological" laws, as, for example, those cited above concerning positive and negative selection. It is this that Bogdanov deals with in his studies of organisational sciences in the periodical *Proletarian Culture.*

Without pausing on all these "tectological laws," we shall note that in these popular articles Bogdanov teaches the workers that dialectic materialism is unscientific and antiquated (p. 102).

[9] *Socialism of Science,* p. 31 (in Russian).

We believe that a sufficient number of quotations from Bogdanov have been adduced (concerning the "elements," "complexes," "activities," and "resistances") to prove that Bogdanov is repeating his old mistakes.

There is no need to pile up quotations from his other works. Their substance is the same. The reader will discover nothing new in them.

It is necessary to note, however, that Bogdanov attempts to prove that he has been misunderstood by Plekhanov, Ilyin [Lenin], Orthodox [Liubov Axelrod], and other followers of Marx who recognise the existence of matter, in so far as they have attributed to his elements the same essential properties which Mach, for example, attributed to his.[10]

But we regret to say that even now Bogdanov's proofs are not convincing. Of what do the above-mentioned adherents of Marx's dialectic materialism speak?

Different as their expressions are, the substance of their dispute with Bogdanov lies in that all of them ask Bogdanov, the empirio-monist, the same question—What is the world's foundation, matter or spirit? Of what do your elements consist?

Bogdanov says on p. 140 (*loc. cit.*) that Plekhanov, Ilyin and Orthodox are mistaken in supposing that the elements of experience are nothing but sensations.

This, don't you see, is a crude conception. The elements in the case of Mach and the empirio-criticists do possess a *perceptual* character, but their perceptual world is regarded as the existing reality and not merely as sensation and representations caused in us by the efficacy of "things-in-themselves." Bodies are perceptual and there are no others. Therefore the elements possess the same perceptual character. A tree does really possess the qualities, green, brown, grey, hardness, odour, etc., independently of whether or not we perceive them, and only when the individual "perceives" it all, do those elements become *for him* "sensations" (p. 141).

Many people, argues Bogdanov, are misled by the term experience, which until now has been given an individualistic meaning.

But the point is, according to Bogdanov, that in whatever way experience is interpreted, the physical world, these "bodies," are nothing but the socially organised experience of men. This means that where there is no socially organised experience, there are no bodies, there is no physical, no external world, and all discourse about the individual and socially organised experience, about activity and resistance, is shallow evasion and idealist absurdity.

It goes without saying that there are many amusing "tectological laws" and views in other books of Bogdanov also, but unfortunately these remarks have gone further than the limits of mere remarks, and we must take leave of the ingressions and the digressions, the "elements" and "complexes." We shall only add, that this universal "tectological" seal is imprinted upon Bogdanov's *Science of Social Consciousness*, upon his *Short Course of Political Economy* and even upon his *Primer of Political Economy* (all in Russian).

We cannot omit the following curious circumstance. There is not a word mentioned, in any of the books, about production and the system of its management during the dictatorship of the proletariat, just as there is not a word mentioned about the dictatorship itself.

But then, these are not the only things about which Bogdanov keeps silent in those works of his which appeared during the Dictatorship of the Proletariat. But he says a great deal about the "philosophy of vital experience" or, to be more correct, the philosophy of dead reaction.

[10] *The Philosophy of Vital Experience*, pp. 140, 202, 224.

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